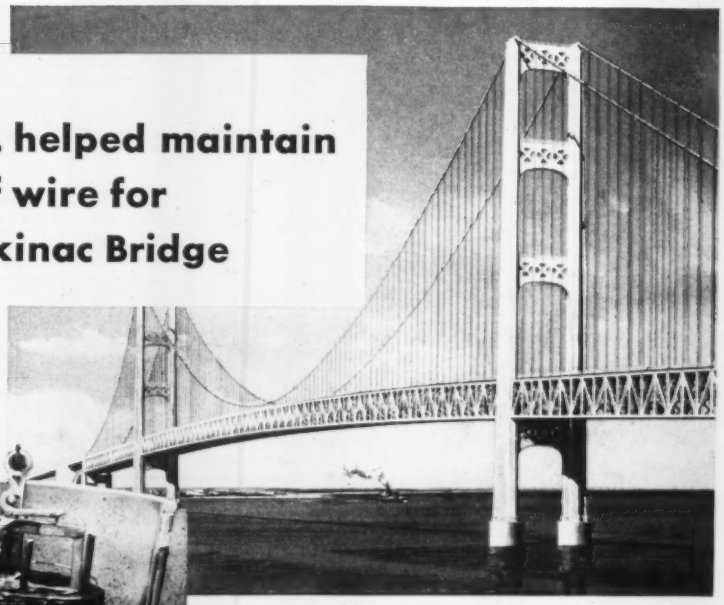
JUNE 23, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

- **U. S. To Ease Railroads' Plight?**
  Their economic health is vital to metalworking . . . *Page* 47
- **STEEL Goes to Russia**
  An "inside" look by Editor-in-Chief Irwin Such . . . *Page* 49
- **The Price of Not Re-Equipping**
  It's rising for firms ignoring the cost crisis . . . *Page* 51
- **Devices To Mechanize Furnaces**
  18 ways to handle parts during heat treatment . . . *Page* 90
- **Nondestructive Tests Advance**
  They're simpler to handle; variety increases . . . *Page* 110

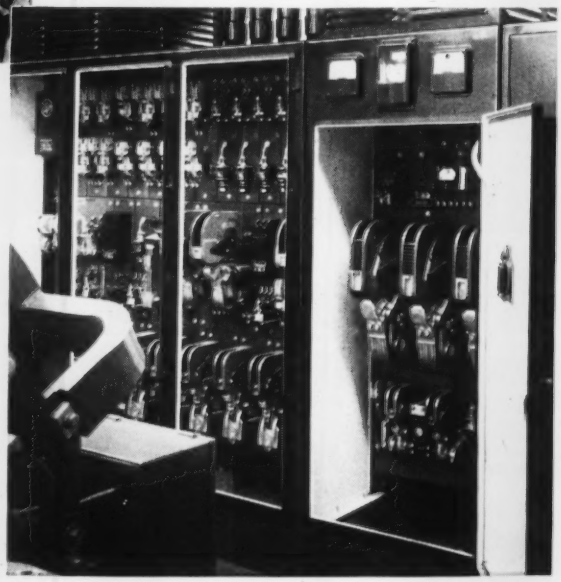
EC&M CONTROL helped maintain steady production of wire for giant cables on Mackinac Bridge



BRIDGE DRAWING • Courtesy of Dr. D. B. Steinman, Cons. Engr. INSTALLATION PHOTOS • Courtesy of American Steel & Wire Division of U. S. Steel Corporation, and Vaughn Machinery Co.

EC&M Wire block Controller *(at left)* for 60/75 HP, 500-1800 RPM, 230 Volt Motors.

Below is 725 HP, 440 Volt Synchronous Motor Starter for 500 KW Generator.



SMOOTH STARTS—QUICK STOPS

Wire drawn at speeds up to 700 feet per minute!

Recently completed Mackinac Bridge connects the two peninsulas of Michigan and stands as a great link in our national highway system. EC&M Control played an important role by helping maintain a steady flow of 0.192″ diameter wire, drawn from rods, to make up the 2-ft. diameter suspension cables.

Good wire-drawing demands several things—ability to (*1*) thread at slow speed, (*2*) accelerate smoothly to continuous drawing speed, and (*3*) provide quick-stopping when the reel is finished or a snarl develops or the wire breaks. EC&M Control for wire machines is *custom engineered* and built to the size and number of motors per machine and to the demand for ever-increasing production-speed.

Consult EC&M on wire-drawing problems.

THE ELECTRIC CONTROLLER & MFG. CO.

A DIVISION OF THE SQUARE D COMPANY

CLEVELAND 28 • OHIO

7410-R

XXIX

This is the twenty-ninth of a series of advertisements dealing with basic facts about alloy steels. Though much of the information is elementary, we believe it will be of interest to many in this field, including men of broad experience who may find it useful to review fundamentals from time to time.

Cold-Finishing of Alloy Steel Bars: Grinding and Polishing

Grinding and polishing of cold-drawn or turned alloy steel bars is the concluding discussion on the subject of cold-finishing. In the processes of turning and polishing, and grinding and polishing (both of which require removal of surface metal), the surface finish of the bars, as well as their dimensional accuracy and alignment, are improved. But the ultimate in quality of bright, smooth surface finish and accuracy is produced by grinding and polishing of either cold-drawn bars or turned bars up to 4-in. diam, inclusive.

GRINDING AND POLISHING

Sizes up to and including 4-in. diam, are generally confined to centerless cylindrical grinders. Larger sizes are ground on centers. A centerless grinder includes a grinding wheel, a regulating wheel for applying pressure against the bar, and a work-rest blade which both supports the bar and guides it between the wheel spacing. Automatic feed of the whole length of the bar is accomplished because the regulating wheel is set at an angle of inclination with respect to the grinding wheel, and thus within this system the bar rotates and feeds during grinding. The bar is then polished to a mirror-like finish by passing through straightening rolls.

Both processes of turning and polishing, and grinding and polishing, are applicable to normalized, annealed, or heat-treated carbon and alloy bars. These operations do not materially affect the mechanical properties. For this reason, the end product can be machined unsymmetrically, with little or no tendency to warp.

Fundamentals Only. In the past four advertisements, we have outlined *basic fundamentals only* on the cold-drawing of alloy bars, the effect of cold-drawing, turning and polishing, and grinding and polishing.

Please keep in mind that Bethlehem metallurgists have given long study to specifications with respect to chemical composition, grain size, hardenability, machinability, and the like, of cold-drawn alloy steel bars. If you would like additional information on cold-drawn products, or alloy steels, our metallurgists will gladly give you all possible help, without cost or obligation.

When you are ready for new supplies of alloy steels, Bethlehem can offer the full range of AISI standard grades, as well as special-analysis steels and all carbon grades.

If you would like reprints of this series of advertisements, please write to us, addressing your request to Publications Department, Bethlehem Steel Company, Bethlehem, Pa. The subjects in the series are now available in a handy 40-page booklet, and we shall be glad to send you a free copy.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

No two stamping jobs they handle are alike

On their way to three COMMERCIAL customers are these completed stamping jobs. Jacket tops for water heaters, transformer cases, dished boiler doors—all are total strangers to each other in both design and product application.

Many times a day, every day, this same story is repeated at COMMERCIAL. Except in the case of repeated orders (a frequent occurrence at COMMERCIAL) no two jobs are alike. Their only similarity can be found in the challenges they all present—unusual shapes, close tolerances, hard-to-form metals.

COMMERCIAL offers you 30 years of metal-forming experience, complete tool and die making facilities and a "die bank" of over 20,000 adaptable components. Next time you're in the market for a medium to heavy custom stamping—to 84" in diameter or 7' x 15'—check with our engineers. Write to Commercial Shearing & Stamping Company, Dept. L-26, Youngstown 1, Ohio.

Specialists in the shape of things to come
CUSTOM STAMPING • UPSET FORGING • ROTOFORMING

COMMERCIAL
shearing & stamping

"For fast, X-ray sound welds, we used Hobart No. 10 welding electrodes to join sections of 208-foot long rigid frames for the University of Tennessee Field House above," says William E. (Bill) Smiddy, Erection Superintendent for Crane and Truck Service, Alcoa, Tennessee.

FOR SPEED AND STRENGTH, prominent builders depend on HOBART No. 10 ELECTRODES

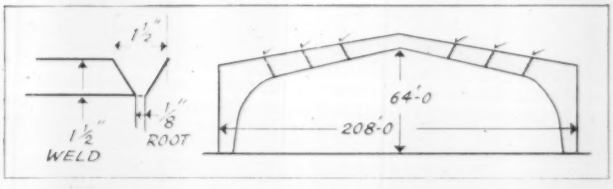
Photo shows seven of nine arc welded rigid frames in place for the new University of Tennessee Armory and Field House. The eighth frame is being assembled on the ground in back of the bulldozer. After the seven shop fabricated sections were joined with Hobart No. 10 electrodes and every weld joint X-rayed, the 57½ ton rigid frame unit was lifted into place by four 30 ton motor cranes. Considerable time and money was saved by assembling, welding and X-raying each rigid frame on the ground and erecting it as a unit.

The roof frame of this clear span structure is just as clean cut as the floor frame; no trusses, no bracing to clutter up the graceful outline of the structure and, consequently, no obstruction to light or the spectator's view of the performance. Size of the framework for the building is 220 feet long and 208 feet wide. Height of framework at center is 64 feet. The building, when completed, will have 7,000 permanent and 3,000 temporary seats.

Seven shaped beam and column sections for each rigid frame were fabricated in the shops of Tucker Steel Corp., Knoxville, Tenn., and trucked to the job site. The bulk of the work was done at the fabricating shop for speed and economy.

Erection time for the framework was 63 days. Six welding operators used over 2¼ tons of Hobart No. 10 electrodes to make the field splices. Current was supplied by six 300 ampere portable gasoline engine driven welders. Every welded joint was X-rayed by Pittsburgh Testing Laboratory, Birmingham, Alabama.

For faster welding where X-ray sound welds are a must, specify Hobart No. 10 electrodes. They tested better than other makes for this job and they will test better for yours. Try them. **HOBART BROTHERS CO., BOX ST-68, TROY, OHIO, Phone FEderal 2-1223.**



HOBART TROY OHIO WELDERS

300 Amp Gas Drive

250 Amp "Contractor's Special"

250 Amp "Big Brother"

---CLIP THIS HANDY COUPON . . . MAIL TODAY!---

HOBART BROTHERS CO., Box ST-68, TROY, OHIO

☐ Yes, I would like to try samples of Hobart No. 10 electrode size ___.

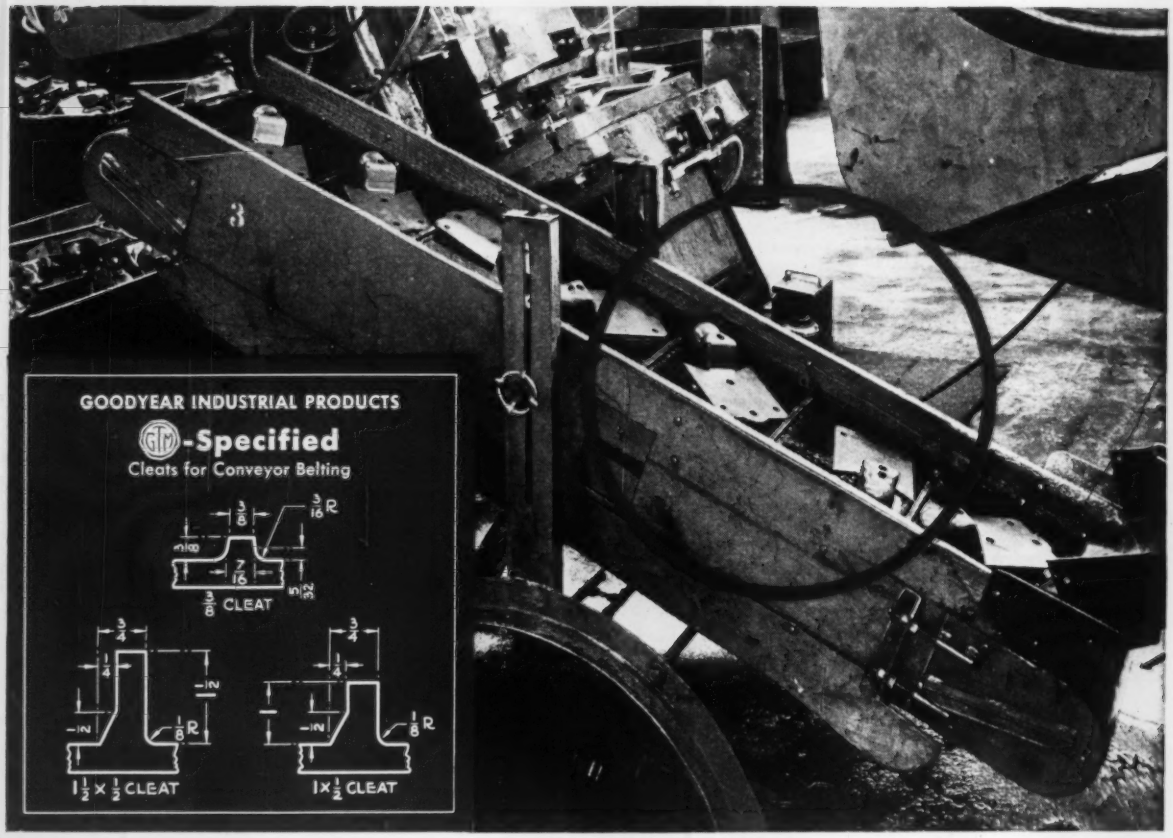
☐ Send me more information on: ___ amp capacity gas drive
☐ "Contractors Special"
☐ "Big Brother"

Name _____

Firm _____

City _____ *Zone* *State* _____

Send complete catalog on
☐ Arc Welding Electrodes ☐ Machines
☐ Send free copy of "Weldors Vest Pocket Guide"



They're raising production—and lowering costs by ⅓

Portable conveyors—between production lines on different levels—were a "must" at this Midwestern automotive parts plant. But the specially constructed belts they used soon cut and flaked off. They became oil-soaked and accumulated dust—dirtying the parts. Worse still, they stretched—had to be taken up every 6 weeks. Even then, none lasted more than a year.

Then the G.T.M.—Goodyear Technical Man—recommended Style ORS Cleated Belts. They're made of rubber especially compounded for extreme resistance to oil, cutting and abrasion. And the tough, firm-gripping cleats are molded right into the rubber for durability.

The savings are impressive: The G.T.M.'s less-expensive belts eliminated the need for parts washing. And after 3 straight years of full service—*three times the life of competitive belts*—they're still going strong.

Like to have savings like these on your production lines? The fastest way to find out is to call the G.T.M. He'll be Johnny-on-the-spot if you contact your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

CONVEYOR BELTING BY

GOODYEAR

60

THE GREATEST NAME IN RUBBER

This Week in STEEL The Metalworking Weekly

June 23, 1958
Vol. 142 No. 25

EDITORIAL 45

Start a ground swell now in your industry and your community for depreciation reform in 1959.

SPECIAL FEATURE 47

Will government ease pressure on railroads? A bill passed by the Senate would provide some financial aid, but it doesn't go far enough. Welfare of metalworking is largely dependent on that of the rails.

WINDOWS OF WASHINGTON 54

Defense reorganization doesn't bother as many highly placed officers as you might think.

MIRRORS OF MOTORDOM 61

Ford's four-passenger T-Bird selling twice as well as last year's two-seater.

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STEEL's industrial production trend line has climbed about halfway back up the recovery ladder.

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STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

NOW!

GET ALL FIVE WITH NEW MULLITEX D SUPER DUTY FIRE BRICK

1. RESISTANCE TO PENETRATION
2. RESISTANCE TO ABRASION
3. RESISTANCE TO SLAG
4. RESISTANCE TO METAL WASH
5. RESISTANCE TO THERMAL SHOCK

With the timely introduction of Mullitex D, Walsh now offers the Steel Industry a more complete line of Missouri-Quality super duty refractories. For all the money-saving facts, contact the nearest Walsh representative, or write for full particulars.

APEX, Extra Duty Stiff Mud Deaired Fire Brick, manufactured from super duty clays. Noted for resistance to slag penetration and metal wash.

MULLITEX HB, Super Duty High Burn Fire Brick, noted for high hot load bearing strength under soaking heat conditions.

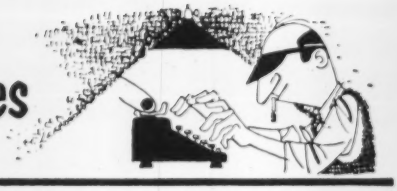
Specialists in refractories of high bulk density and low porosity

WALSH REFRACTORIES CORPORATION

101 FERRY ST. • ST. LOUIS 7, MO.

FOR OVER 60 YEARS MANUFACTURERS OF HIGH GRADE REFRACTORIES

behind the scenes



X Is for Excuse It, Please

Telephone operators, secretaries, reporters, and others who are obliged to spell words over a telephone use a more or less standard code: A is for Alice, B is for boy, etc. Years ago, as a young police reporter, we chafed under those strict requirements. Having occasion to call in a police report of an abortion, the word wasn't understood.

"Spell it!" came the familiar bellow.

"A as in Alice—"

"What as in what? Speak up; I can't understand you!"

The temptation was too great. "A as in astigmatism, B as in bubonic plague, O as in osteomyelitis, R as in ruin, T as in thermotherapy, I as in eyeglasses, O as in oviparous, and N as in nuts. Is that clear?"

The electric pause should have been a warning. Presently, in solemn intonation, came the perfect response. "F as in fed up, I as in ikky, R as in release, E as in exit, D as in discharge. Is that clear?"

Spelling over a telephone is still the most effective way to push misunderstood words over a wire, and that's what Editor-in-Chief Irwin Such and Editor Walt Campbell were doing last week. Mr. Such was relaying names and events, and Mr. Campbell was writing them down as rapidly as he was able. STEEL was going to press, and the information had to be taken accurately.

"J?" asked Campbell. "A? H? Oh, K! You mean K as in Katy?"

"No!" said Such faintly. "K as in Khrushchev!"

Here was another instance of Irwin's lightning ability to adjust to any situation: He was telephoning long distance from Leningrad, one of the stops on his current tour of the Union of Socialist Soviet Republics.

Hold the Presses Dept.

An impressive amount of editorial material comes to STEEL by telephone, telegraph, and teletype. Resident editors frequently utilize the teletype to transcribe rush stuff, corrections, additions, deletions, etc. Last week the machine figured in a drama that included a cast of New York Editor Brian Wilson, Associate Editor Bob Jaynes, Cleveland Teletype Operator Norma Klinger, and New York Operator Irene McSweeney.

At 9:30 a.m. Jaynes was rejoicing in the contemplation of his form—his printing form, that is; specifically, the one containing Wilson's metal market report from New York. It was scheduled to roll at 11 a.m. A frantic call from Norma Klinger jarred him awake.

"I got Mr. Wilson on the teletype," she fluttered. "Something is wrong with his report."

Jaynes ran to the machine and was dismayed to learn that Wilson was shooting in corrections as fast as Irene could type them.

"Tell him to hold up," he directed Norma. "We can't make any changes after—"

"Here's another change in prices," stuttered the machine.

"This has got to stop!" cried Jaynes. The words appeared in New York instantly, and just as quickly Irene typed back: "Please advise what Mr. Wilson will do. He is on his way to an open window right now."

Before Jaynes could formulate a reply, Norma typed frantically: "Catch his coattails please. Good men are hard to find."

Yes indeed, friends and neighbors, there's a powerful lot of preparation behind STEEL's market pages. Correction, please: behind every page in STEEL.

Prophet Profits by Guess

Ray Koehler, ORDTB Materials, Office of the Chief of Ordnance, Department of the Army, Washington 25, D. C., is a prophet. On May 8 he informed us that STEEL's Industrial Production Index for the week ending May 31 would be 124.35. When all the facts were in, the actual figure was seen to be 124.10, so we sent Mr. Koehler a check for $10 to buy a dinner for two.

The average guess was 116.92, so we must assume that conditions are much better than most of us anticipated; everybody except Mr. Koehler, of course. When he sent in his guess, he remarked that his figures could be rearranged into a straight. Well, that straight turned into a straight flush, an unbeatable combination when nothing is wild.

We are much obliged to all the gentle readers who were kind enough to enter our contest. In most of STEEL's surveys, readers are frequently ahead of the editors. Forecasts are usually on the correct side, so we are puzzled by the pessimism that has not been vindicated. On the week ended June 7, STEEL's Industrial Production was up to 129; on the week ended June 14 it may be in the 130s. Does this mean that industry is picking itself off the floor, preparing to belt the recession into the ropes? In December, 1956, the figure was 168; in March 1958 it was 118. If you can fall in love with figures, things look mighty promising.

Shrdlu

(Metalworking Outlook—Page 41)

the big attraction is...

CINCINNATI

inductron® and flamatic®

Selective Surface Heat Treating

When it comes to selective part surface heat treating, production executives and plant operating men have shown an unusual interest in Cincinnati equipment. For Cincinnati builds both induction and flame heat-treating machines. Highly versatile Inductrons and Flamatics can do such work as annealing, brazing, soldering, tempering, stress-relieving, shrink fitting—and meet your cost-per-piece requirements—on high production quantities or varied, small-lot runs.

For information, call in a Meta-Dynamics Division field engineer. Backed by the resources of Cincinnati's completely staffed and equipped heat engineering laboratories, your needs will be analyzed, your parts "test run", and specific, unbiased recommendations made. Of course, there's no obligation.

Built in 15, 30 and 50 KW capacities, the new Cincinnati Inductron operates at frequencies up to approx. 1000 KC for faster heating, thinner case, greater freedom from scale and distortion. Write for Catalog No. M-1993.

New Cincinnati Flamatic shown equipped with rotary spindle unit. "Building-block" construction adapts the Flamatic to an extremely wide range of flame heating applications. Write for Catalog No. M-2015.

inductron
flamatic
hardening machines
META-DYNAMICS DIVISION
Machines for Metal Forming and Heat Treating

THE CINCINNATI MILLING MACHINE CO.
Cincinnati 9, Ohio, U.S.A.

CINCINNATI

The efficient action of a Flat Spring is dependent upon the quality of the STRIP STEEL.

WASHBURN

has over 50 years of experience in solving spring steel problems, to guarantee the quality of your product.

Flat Tempered and Untempered Wire in .50 to 1.25 Carbon Range.

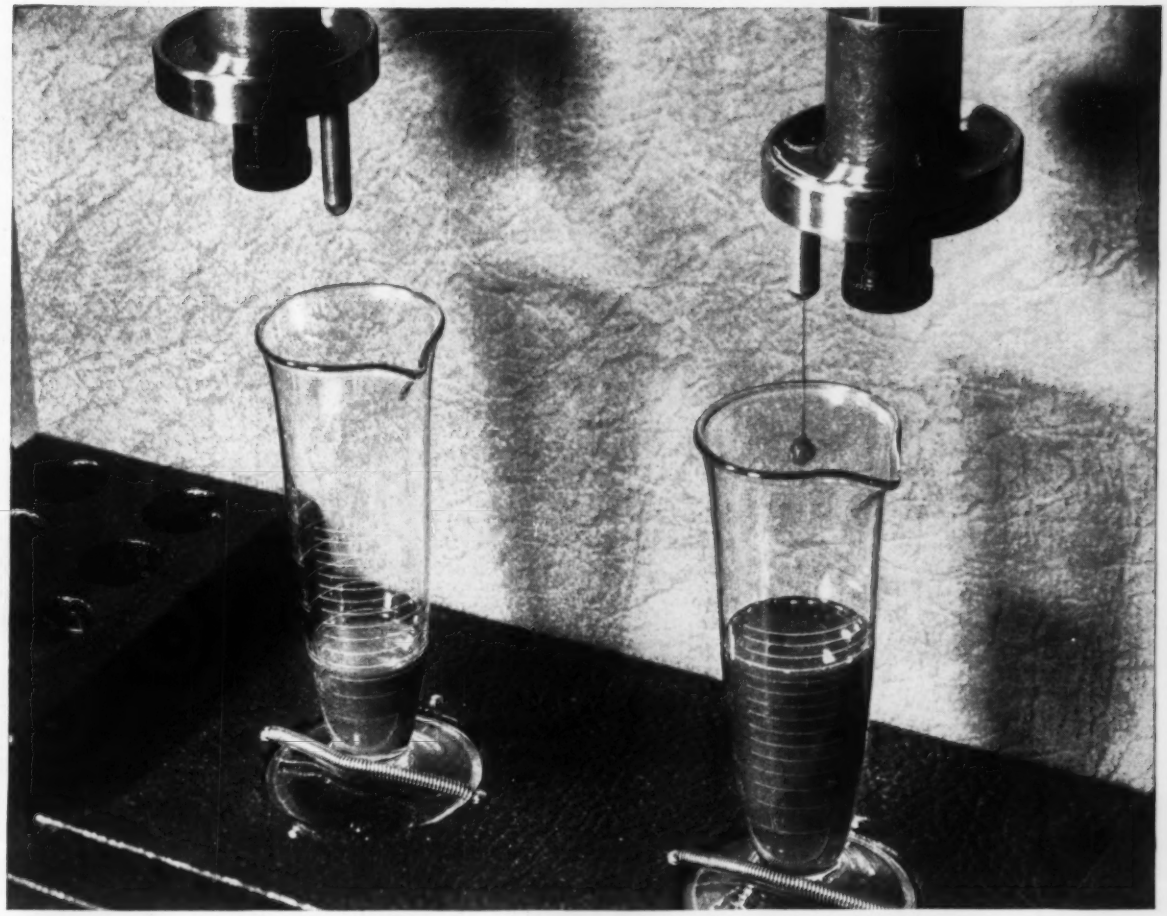
Flat Cold Rolled Strip 6" and Narrower, Bright, Galvanized, Tinned and Cadmium Finish.

Round Untempered Low and High Carbon Spring Wires.

WASHBURN WIRE COMPANY, NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS - STRIP - RECTANGULAR, ROUND, FLAT RODS
TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES



The oils collecting in these graduates are being forced, at 100 psi, through two sintered bronze bearings. Although each oil has the same viscosity, the Suntac on the left is leaking *only one quarter as much as* the straight oil on the right.

Desk-top demonstration proves that SUNTAC HYDRAULIC OILS can cut your oil losses . . . up to 75%

Suntac® oils are competitive in price, competitive in quality, *and unique in their ability to reduce oil leakage without costly shutdowns.*

Suntac oils are high-quality, exceptionally stable mineral oils especially compounded to reduce leakage. Experience proves that they give longer pump and seal life with higher overall operating efficiency.

See for yourself how a Suntac oil can cut your oil costs. A simple desk-top demonstration will show you how.

Ask your Sun man to show you how others have reduced oil consumption, or write to Dept. S-6.

Industrial Products Department

SUN OIL COMPANY, Phila. 3, Pa.

SUNOCO®

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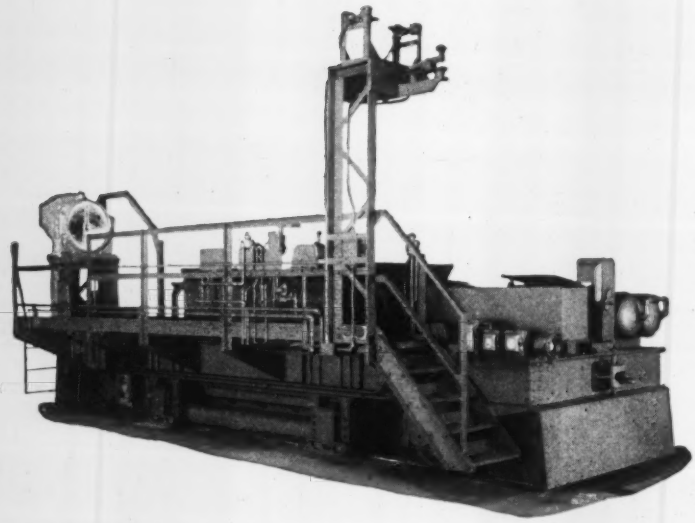
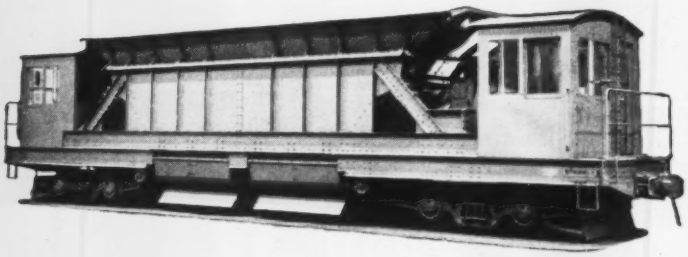
In Canada: Sun Oil Company Limited, Toronto and Montreal

HERE'S *built-in* STAMINA *that spells* DEPENDABILITY

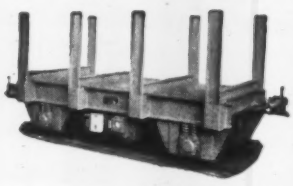


10-TON SCALE CAR, SINGLE HOPPER, BOTTOM DUMP



75-TON ORE TRANSFER, GABLE BOTTOM, SIDE DUMP

Atlas "single-lever" Safety-Type transfers give outstanding short-haul service . . . such as between buildings, for cross-bay crane service, and movement in production. Powered to meet your operating needs . . . storage battery, diesel or gas-electric, or cable reel.



Request "Walk-Along" Bulletin 1283

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

LETTERS
TO THE EDITORS

Uses STEEL Story Ideas

Every copy of STEEL brings us a lot of interesting reading and usually some ideas that we adapt to ourselves and our business.

The June 2 issue is no exception. On Page 40 is a short article, "New Incentive Plan Pays Off." We would appreciate six copies.

Donald L. French
Structural Metals Inc.
Seguin, Tex.

Joins Depreciation Fight

Your article, "Let's Leap to Recovery with Bold Action on Depreciation" (April 28, Page 55), is so right that we would appreciate a half dozen copies.

Herbert W. Wilson
Wilson & Wilson
Cleveland

His Sales Are Up

I believe far too many writers today play up the downtrend in business, rather than the uptrend. I am sure that if we never expect to improve, our course will be ever downward. We are grateful for the improvement in our position for the year to date, and it is a pleasure to see our good fortune called to the attention of your readers in the article, "Farm Machinery Sales Up" (June 2, Page 46).

Carl L. Hecker
Executive Vice President
Oliver Corp.
Chicago

Agrees with Editorial

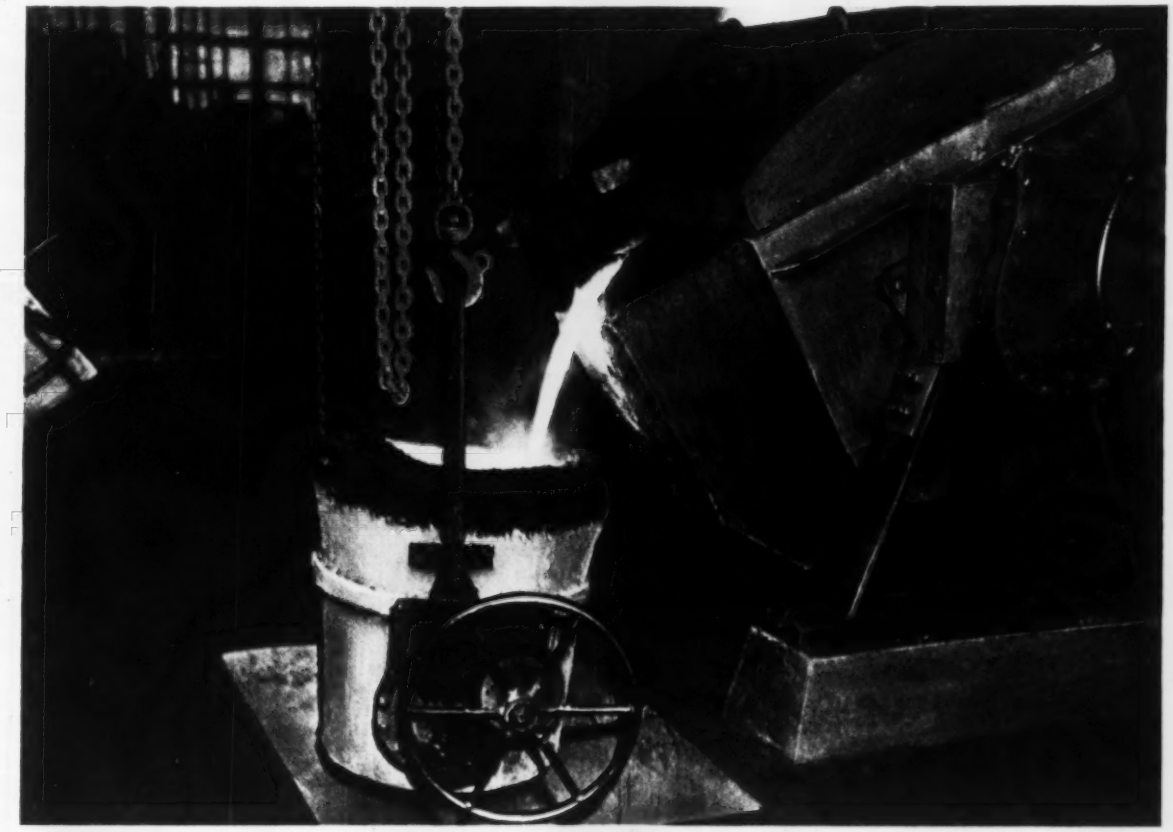
Your editorial, "Modernization: We Need a Tax Break" (June 2, Page 33), is excellent.

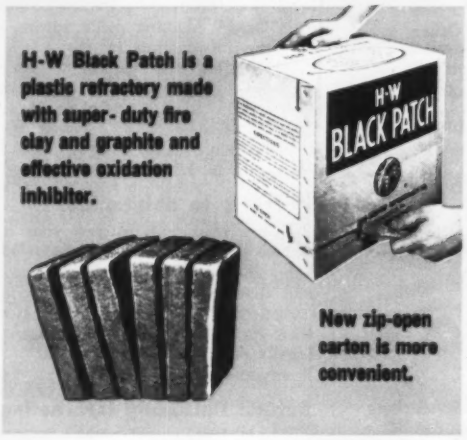
As we know, Hitler wanted rapid modernization of German industry and his advisers recommended such a measure: Every plant was permitted to keep 10 per cent as maximum profits, and everything above 10 per cent had to be returned to the treasury, but the money could be invested into such things as new machines and buildings; then all profits (no matter how high they were) remained in the hands of the owner. The result was fantastic.

A much faster writeoff would do an

(Please turn to Page 12)

Ladle linings last longer with H-W **BLACK PATCH**




H-W Black Patch is a plastic refractory made with super-duty fire clay and graphite and effective oxidation inhibitor.
H-W
BLACK PATCH
New zip-open carton is more convenient.

Costs are reduced, linings last longer and cleaner metal is assured with Harbison-Walker BLACK PATCH because:

- H-W Black Patch makes a joint-free monolithic lining of very high refractoriness.
- H-W Black Patch develops a strong ceramic set upon heating and is exceedingly resistant to erosion.
- H-W Black Patch is not wetted by molten iron and is not appreciably penetrated by slag and metal.
- H-W Black Patch is highly resistant to thermal shock and oxidation.
- H-W Black Patch is easy to use by air- or hand-ramming to any desired shape.

Other important applications in which H-W BLACK PATCH renders unusual service for cupola requirements are breast walls, tap and slag holes, spouts and runners.

World's Most Complete Refractories Service

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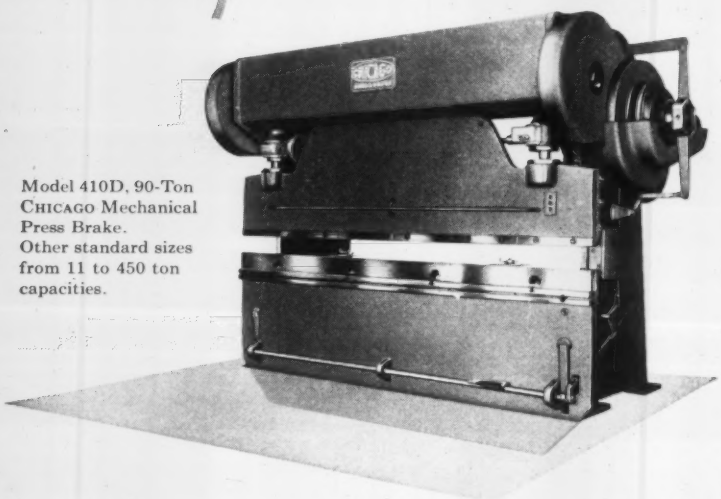
AND SUBSIDIARIES

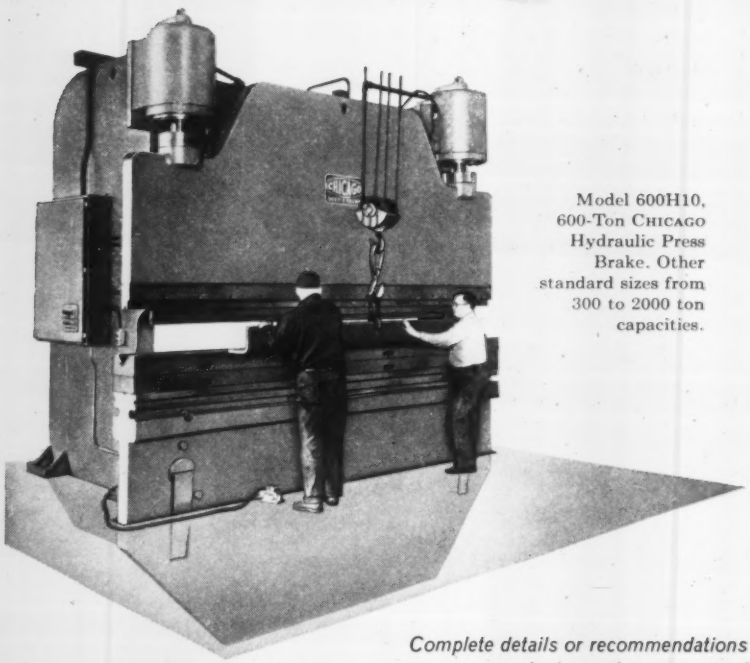
General Offices: Pittsburgh 22, Pennsylvania

CHICAGO® PRESS BRAKES

unexcelled accuracy / ***for sheet metal and plate work***



Model 410D, 90-Ton CHICAGO Mechanical Press Brake. Other standard sizes from 11 to 450 ton capacities.



Model 600H10, 600-Ton CHICAGO Hydraulic Press Brake. Other standard sizes from 300 to 2000 ton capacities.

Complete details or recommendations on any press brake work upon request

8439

Press Brakes
Press Brake Dies
Straight-Side-Type Presses
Hand and Power Bending Brakes
Special Forming Machines

CHICAGO DREIS & KRUMP

DREIS & KRUMP
MANUFACTURING CO.
7458 S. Loomis Blvd., Chicago 36, Illinois

LETTERS

(Concluded from Page 10)

even better job without dictatorial methods.

Russian plants are getting new machines as soon as they are available. They do not think about "writeoffs." As soon as an obsolete machine may be replaced by a new one, they replace it simply because they want maximum productivity.

A company will never dispose of old machines until new ones are able to do a better job. But it must not be punished for modernization.

John Obrebski
Monarch Machine Tool Co.
Sidney, Ohio

Likes Electrical Steels Article

Please forward a copy of the fine article, "Electrical Steels: How To Choose and Improve Them" (June 9, Page 116). Personally, I would like to see more articles written on this subject.

R. H. Pell
Chief Engineer
Contract Engineering Div.
Teller Co.
Butler, Pa.

Approves STEEL Coverage

Please send a reprint of the article, "Are Your Inventories Right?" (June 2, Page 35). I certainly appreciate each issue of this publication for both general and specific topics covered.

Richard Sabor
Production Control
Tonka Toys Inc.
Mound, Minn.

Requests Cutting Tool Data

The article, "Speed Boost Cuts Tough Metals" (June 2, Page 88), was read with considerable interest, and I would like to obtain 20 reprints. We import and sell the "Ceroc" alumina oxide cutting tools, and the information in the article will be interesting and helpful to our sales personnel.

Robert M. Cunha
Director of Sales
Gulton Industries Inc.
Metuchen, N. J.

Reprints to Shipbuilder

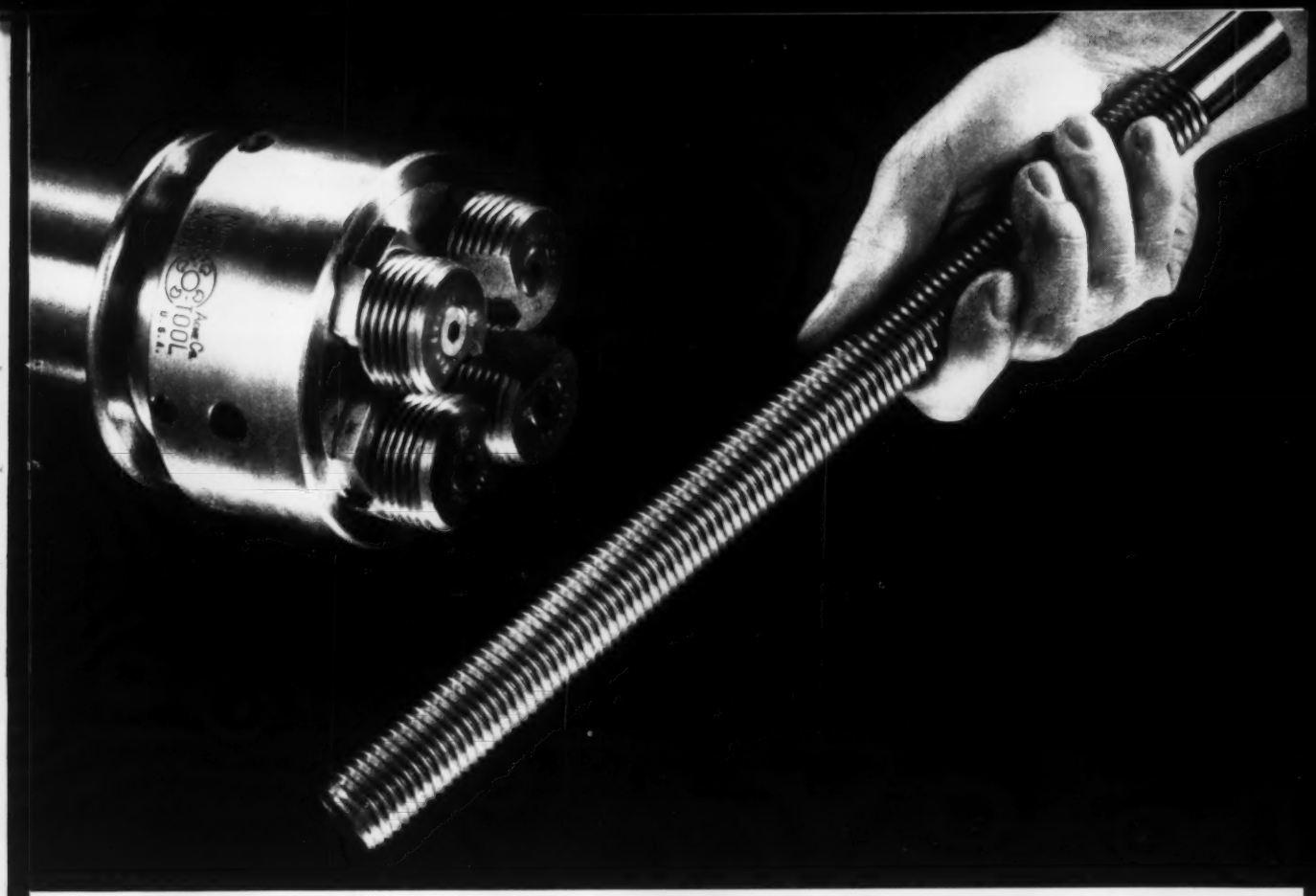
I have read with interest your article, "These Devices Turn 'Tilts' into Dollars" (May 26, Page 104), and would appreciate four reprints.

W. R. Guest Jr.
Vice President-Production Manager
Ingalls Shipbuilding Corp.
Pascagoula, Miss.

Series: Unusually Interesting

Would you send four copies each of the first four articles in your 1958 Program for Management series? We have found them to be unusually interesting.

M. E. Wertz
Director of Industrial & Labor Relations
Lehigh Structural Steel Co.
Allentown, Pa.



VERS-O-TOOL cuts 10.3 miles of thread per grind on this job . . .

The Federal Screw Works had a real problem in threading. They had received a large order for 1"x13" adjusting screws. Using most thread cutting methods this would be a big, costly assignment.

Federal put a Namco 1⅝" DR Vers-o-Tool on the job and as a result, found they had to grind the chasers only once for approximately 2000 pieces. This means that each grind cuts well over 10 linear miles of thread. Threading cost per piece was amazingly low.

Remember, Vers-o-Tools can be used with your present turning equipment, lathes, drill presses or automatics. No investment in special machines required.

Find out how you can put Vers-o-Tools to work reducing your thread cutting costs. Write for a free copy of Booklet DT-52.

You can grind and regrind Vers-o-Tool circular chasers to a full 270° of the chaser circumference.

In addition to thread cutting, Vers-o-tools may be used for end forming, end turning, chamfering, necking, knurling and burnishing.

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THE NATIONAL ACME COMPANY, 189 E. 131st St., CLEVELAND 8, OHIO • Sales Offices: Newark 2, N. J., Chicago 6, Ill., Detroit 27, Mich.

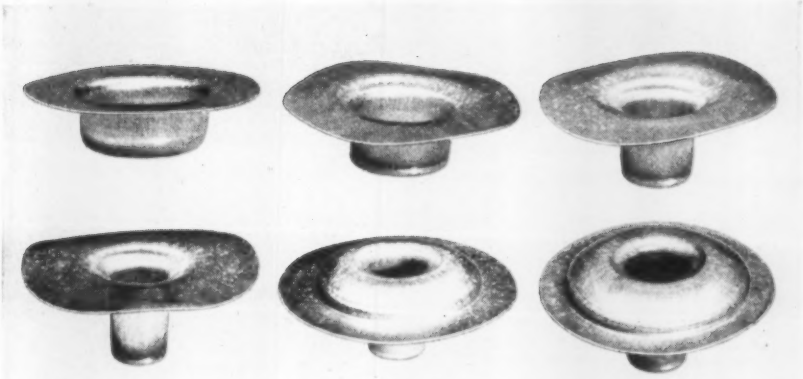
REPUBLIC STEEL WIRE HELPS SELL AUTOS

With today's sleek cars being built closer and closer to the ground, the design of functional—yet comfortable—front and rear seats becomes an increasingly complex problem.

The Seating Division of Rockwell-Standard Corporation, a major producer of car seats, has discarded the principle of high-type springing that limits space. Instead it uses Republic round, high carbon MB spring wire to fabricate a relatively flat spring unit called a "square formed" spring. The company also forms the wire into Zig-Zag springs. These two types result in comfortable seats requiring much less height.

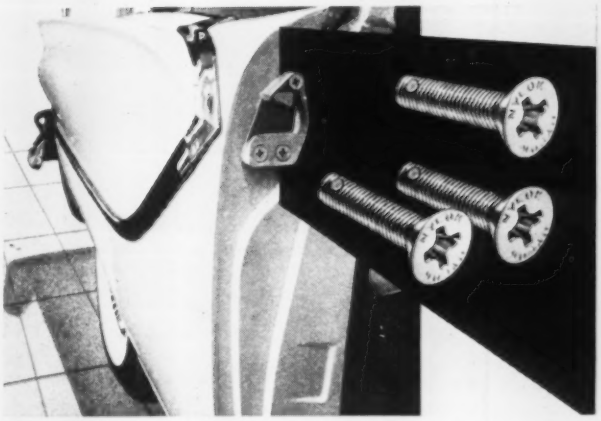
Each car model requires a different type of seat construction. Often, Rockwell-Standard has more than a hundred differently designed car seats going through its Seating Division. When a new design problem arises, it calls in Republic specialists on spring wire. These men help determine the proper quality that will take the severe forming and bending required in fabricating the springs.

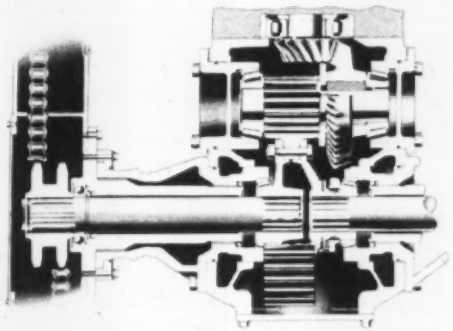
Whether your product calls for high or low carbon wire, Republic Wire Metallurgists are always available to work with you in selection, application, processing, and to make sure you get the best in quality. The coupon will let us know if you would like one to call at your plant.



HERE ARE SIX STEPS of possibly the severest manufacturing torture that a galvanized steel sheet can take. In its final form, it becomes the end piece of a muffler manufactured by the Mackenzie Muffler Company, Inc., Youngstown, Ohio. It is made out of Republic Continuous Galvanized Sheets. Despite the many deep drawing operations, the coating does not crack, flake, or peel. Republic Galvanized Sheets can do a profitable job for you. Clip the coupon and mail it in for more information.

SAFETY COMES FIRST—in the door latching of Ford cars. So Ford engineers have specified Republic Nylok Bolts to anchor the striker plate to the door post. Nylon pellet insert in bolt body forces a tight metal-to-metal lock between mating threads for a positive, vibration-proof clamping action. Republic Nylok Bolts are adjustable and reusable with no loss of holding power. Send coupon for descriptive folder.





EXCEPTIONALLY HIGH STRENGTH-TO-WEIGHT RATIOS plus resistance to fatigue, stress, shock, and impact are values of Republic Alloy Steels that equipment builders have been relying on for years. Engineers and metallurgists of the Adams Division, LeTourneau-Westinghouse Company, for example, spent thousands of hours on research and testing of all types of steels to find one that would reduce ultimate fatigue to an absolute minimum in the drive axle of their "660" Motor Grader. They selected Republic Hot Rolled 4340 Alloy Steel. This fine steel not only resists fatigue, but also is able to take high torque without a permanent set. Specify Republic Alloy Steels where strength and toughness must resist heavy-duty roughness. Our metallurgists will help you.

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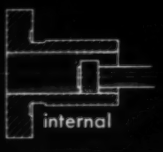
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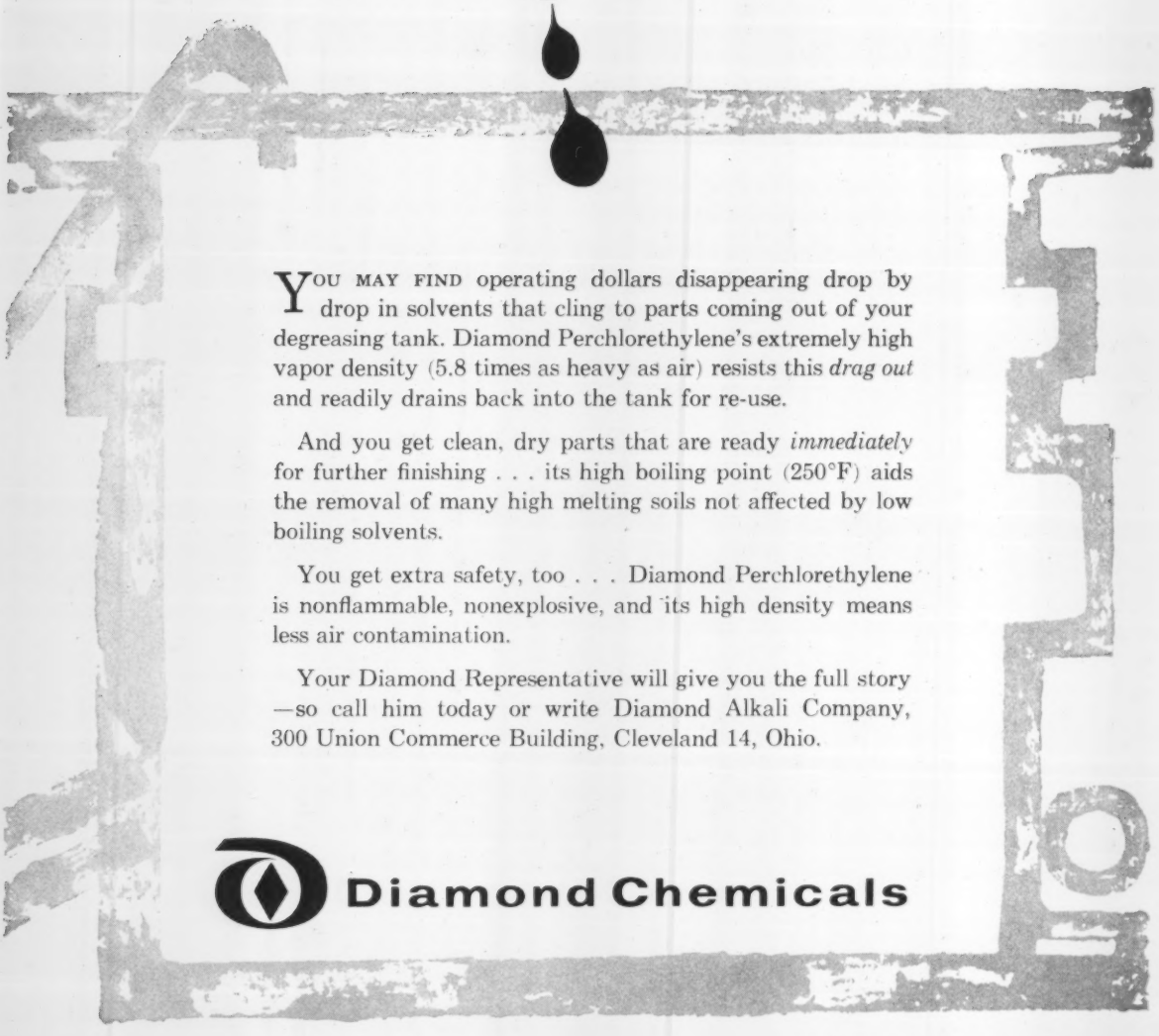
precision grinders
LANDIS TOOL COMPANY / WAYNESBORO, PENNA.

is your degreasing solvent suffering from

DOLLAR "DRAG OUT" ?



YOU MAY FIND operating dollars disappearing drop by drop in solvents that cling to parts coming out of your degreasing tank. Diamond Perchlorethylene's extremely high vapor density (5.8 times as heavy as air) resists this *drag out* and readily drains back into the tank for re-use.

And you get clean, dry parts that are ready *immediately* for further finishing . . . its high boiling point (250°F) aids the removal of many high melting soils not affected by low boiling solvents.

You get extra safety, too . . . Diamond Perchlorethylene is nonflammable, nonexplosive, and its high density means less air contamination.

Your Diamond Representative will give you the full story —so call him today or write Diamond Alkali Company, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals

"...AND WEIRKOTE CAN DO AWAY WITH PLATING OR DIPPING AFTER FABRICATION! IT WON'T PEEL OR FLAKE."

Q. A zinc-coated steel that won't peel or flake? That could save us a lot of money every month. Just what makes this Weirkote so special?

A. It's made by the continuous process, you know, which integrates zinc and steel so that the toughest fabrication won't break down the bond. You can work Weirkote to the very limits of the steel itself.

Q. Of course, that means the most complicated parts would have protection against rust. I like what I'm hearing. Is there more?

A. Yes . . . now Weirkote is treated to inhibit wet storage stain (white oxide). To make a long story short, I'd say this: With Weirkote, you can turn out a better product at lower cost. And you can free a lot of the capital, floor space and time you have tied up in plating operations.

Send for free booklet that details the time- and cost-saving advantages of skin-tight zinc-coated Weirkote. Weirton Steel Company, Dept. B-7, Weirton, West Virginia.

WEIRTON STEEL COMPANY

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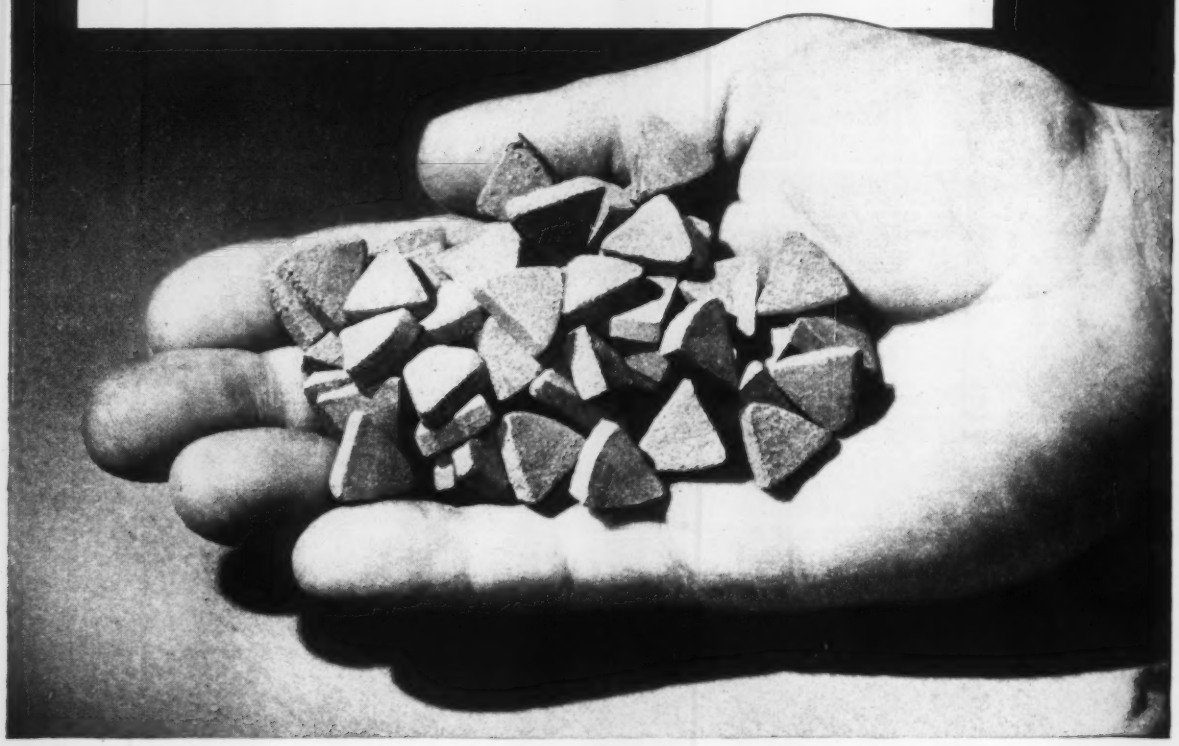
Leading deburring company writes in:

To us, TUMBLEX* "T" abrasive is literally a "Touch of Gold"



Describing one of the revolutionary Norton barrel finishing abrasives, this customer continues:

We formerly were stocking four types of finishing media. By switching to ALUNDUM TUMBLEX *"T" abrasive we have eliminated three types and are getting better results. For example, one particular metal part required six hand operations prior to barrel finishing. Now, with your abrasive triangles, barrel finishing is all that's needed.*

Made of bonded ALUNDUM* abrasive, TUMBLEX "T" has a triangular, non-wedging shape that's excellent for finishing intricate-shaped parts . . . provides long, even wear . . . assures fine, uniform finish, short time cycles and big savings in finishing costs.

Other Norton top-performing barrel finishing abrasives include ALUNDUM TUMBLEX "A" abrasive, for general usage; ALUNDUM TUMBLEX "S" abrasive spheres that get into hard-to-reach areas; and TUMBLEX "N" abrasive, natural stones for producing highest lustre on various parts.

Send samples of parts, any sizes or shapes, to our Sample Processing Department. We'll barrel finish, return samples and report the methods and abrasives you need. Or, when you're in this area, come in and look things over, personally.

NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors around the world.

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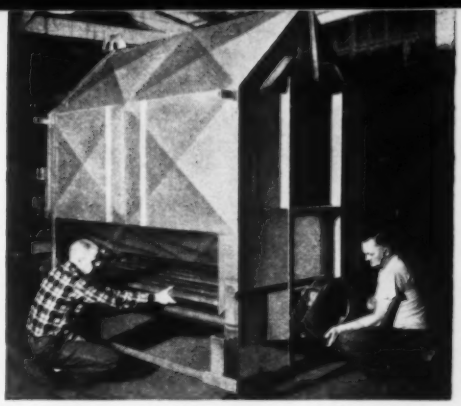
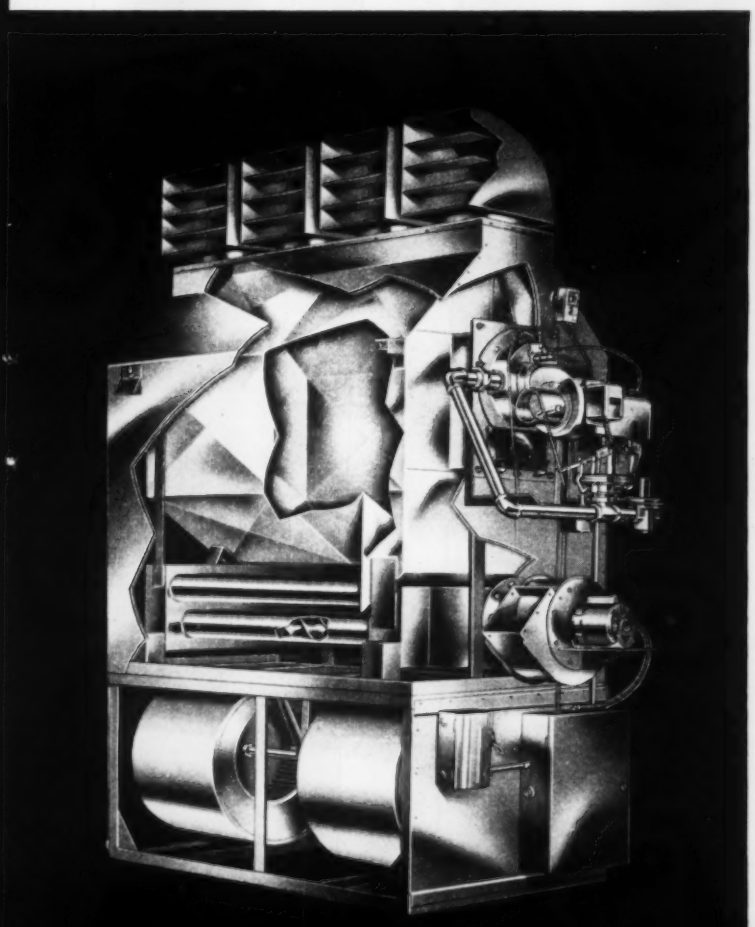


Workmen at Lennox Industries are fabricating a modern advance-designed Lennox Industrial Heater from Youngstown Steel.

Accent on Excellence

Youngstown cold-rolled sheets



LENNOX Industrial Heaters

Because long, cold winters can easily take their toll of inferior industrial heaters, quality manufacturers such as Lennox Industries Inc., of Marshalltown, Iowa, build extra service and durability into every heater they produce.

To provide for a long, trouble-free service life, Lennox Auto-Therm Industrial heaters are fabricated from Youngstown Cold-Rolled Sheets. These heaters, producing from 400,000 to 2 million Btuh, require steels that can withstand the temperature variations and long service required in industry—so they specify Youngstown.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

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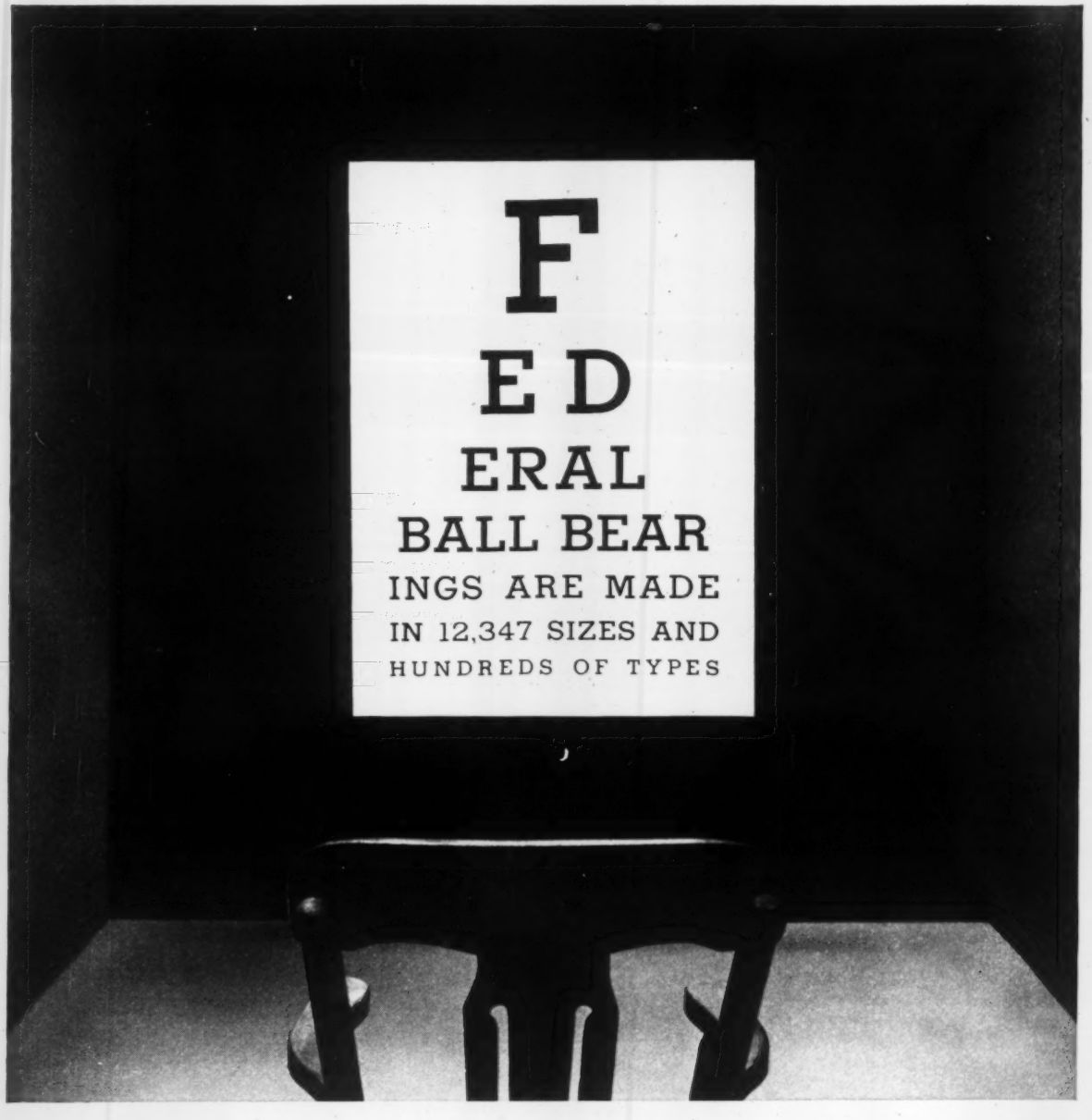
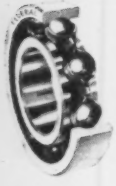
Manufacturers of Carbon, Alloy and Yoloy Steel
Youngstown, Ohio



HOW FAR-SIGHTED ARE YOU?



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CALENDAR
OF MEETINGS

June 22-27, American Society for Testing Materials: Annual meeting and exhibit, Statler-Hilton Hotel, Boston. Society's address: 1916 Race St., Philadelphia 3, Pa. Executive secretary: Robert J. Painter.

June 23-27, American Institute of Electrical Engineers: Summer general meeting, Hotel Statler-Hilton, Buffalo. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

June 24-26, American Marketing Association: National conference, Harvard Graduate School of Business, Boston. Association's address: 27 E. Monroe St., Chicago 3, Ill. Secretary: Schuyler F. Otteson.

July 14-16, Truck-Trailer Manufacturers Association: Summer meeting, Homestead, Hot Springs, Va. Association's address: 710 Albee Bldg., Washington 5, D. C. Managing director: John B. Hulse.

July 23-26, National Tool & Die Manufacturers Association: Summer board meeting, Mt. Washington Hotel, Bretton Woods, N. H. Association's address: 907 Public Square Bldg., Cleveland 13, Ohio. Executive vice president: George S. Eaton.

Aug. 11-14, Society of Automotive Engineers: National west coast meeting, Ambassador Hotel, Los Angeles. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Aug. 19-22, American Institute of Electrical Engineers: Pacific general meeting, Hotel Senator, Sacramento, Calif. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Aug. 19-22, Western Electronic Show & Convention: Pan-Pacific Auditorium, Los Angeles. Information: WESCON, 1435 S. LaCienega Blvd., Los Angeles 35, Calif.

Sept. 7-12, American Chemical Society: National chemical exposition and conference, International Amphitheatre, Chicago. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Sept. 8-11, Society of Automotive Engineers: Farm, construction, and industrial machinery meeting, production forum, and engineering display, Milwaukee Auditorium, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

Sept. 10-11, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Laine.

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9 sizes: 3, 5, 6, 7½, 8, 10, 12, 15, 30 tons capacity. Fluid Drive, Power Steering. Write for Bulletin No. 77.

shrink days into hours...

Tedious, costly work of Loading, Unloading and Stacking that take many men, many days can be compressed into a few hours . . . with just *one* man operating SILENT HOIST materials handling equipment . . . *releasing crews for other productive chores.* Costs rising? Competition rugged? SILENT HOIST may have an interesting answer for you! Details of some important case-histories will be furnished—cheerfully, without obligation.

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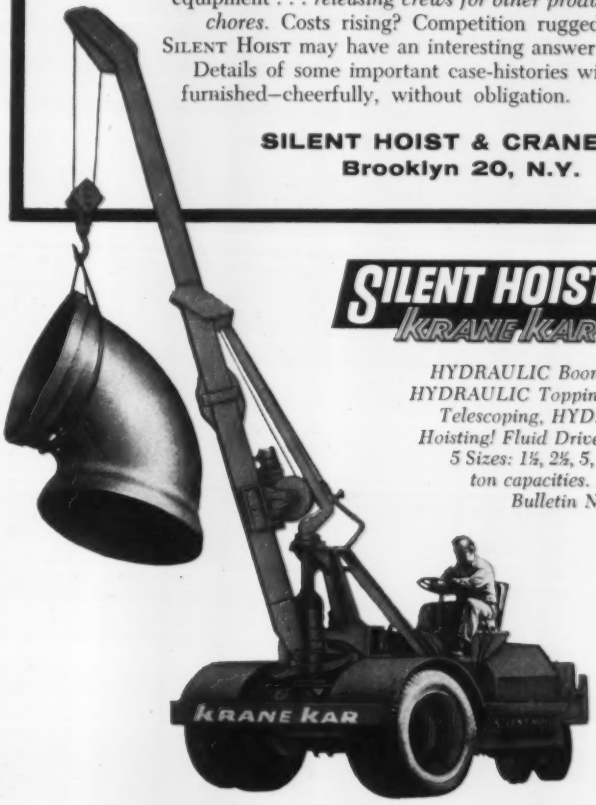

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Kaiser Aluminum ingots being prepared for "homogenizing" in Gas-fired furnaces prior to extrusion into aircraft parts

GAS assures precision alloy extrusions at Kaiser Aluminum

Gas plays a major role in the development of precision quality alloy extrusions for aircraft at the U. S. Air Force Heavy Press Plant operated by Kaiser Aluminum at Halethorpe, Maryland.

With Gas, uniform temperature and controlled atmosphere keep molten aluminum flowing smoothly into casting equipment. The metal is cast into logs about 12 to 26 inches thick and 25 feet long. Gas-fired furnaces heat the logs to 1000° F and hold this temperature about 24 hours to homogenize the metal prior to extrusion. The long logs are cut into 58 inch billets, placed on the press and extruded into various shapes.

Again, Gas is used to heat the extruded shapes in a controlled atmosphere to impart the desired physical qualities in the alloys used. As in the melting process, Gas provides precise temperature control and close control of atmosphere within the furnace.

For information on how Gas can help you in your production operations, call your Gas Company's industrial specialist. He'll be glad to discuss the economies and outstanding results Gas and modern Gas equipment provide. *American Gas Association.*

... Results of a Superior Beginning

The countless parts and products made from Roebling high-carbon steel spring wire and flat spring steel have one thing in common . . . their superior quality. This, of course, is related to the inherent fineness of the materials.

The variety in which Roebling offers these spring materials is equally impressive. They are available in hard drawn, hard rolled, annealed or soft, tempered or untempered. Types include zigzag and no-sag wires; upholstery and mechanical spring wires; valve spring wire; clock- and motor-type spring steels and flat spring steels of all types and description.

Whatever the type, size or characteristics you require—Roebling can fit your needs exactly. You'll find that Roebling quality means maximum production from your machines and consistent uniformity in your product.

For spring wire and flat spring steel information, contact Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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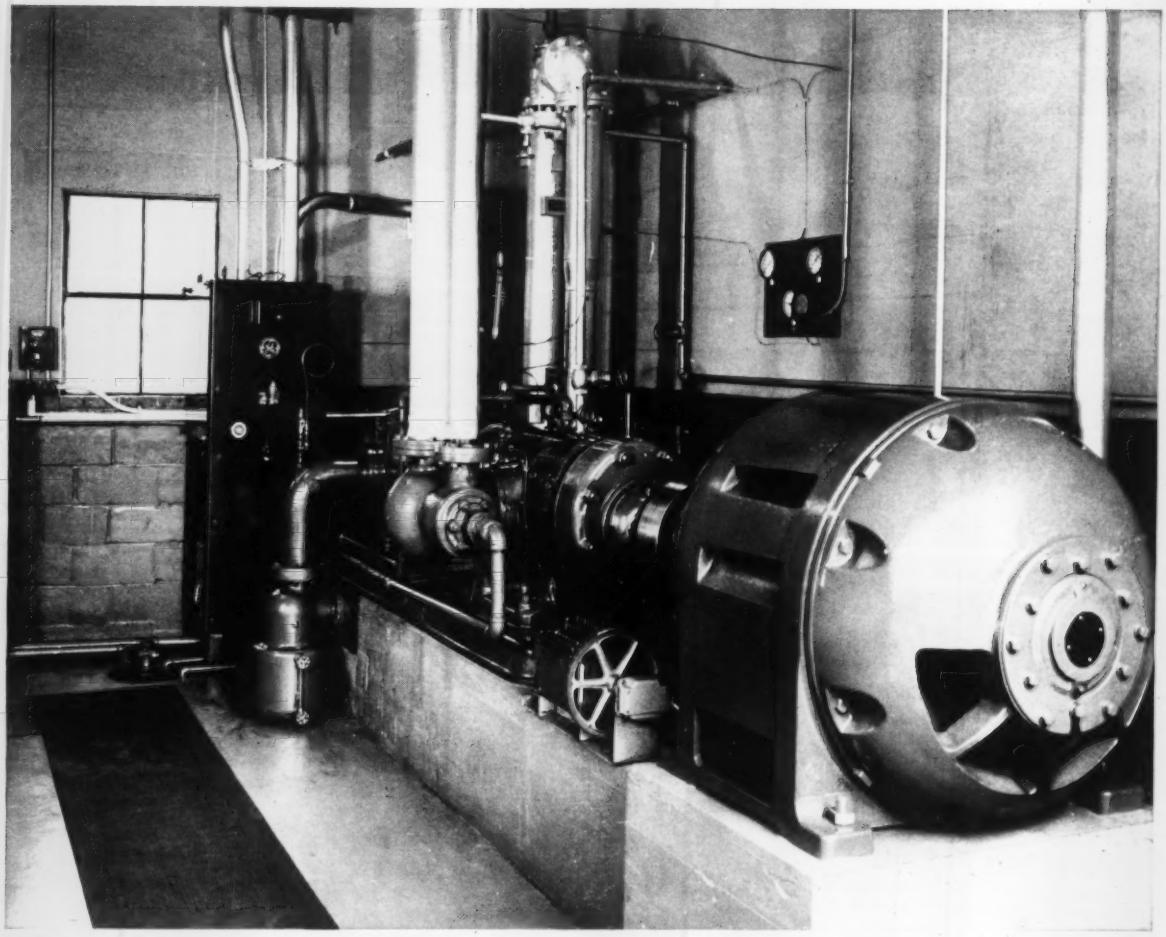
Roebling... Your Product is Better for it



Fuller Rotary Two-Stage Compressor, C135-135H. Capacity 680 c.f.m., 100 lb. pressure, 690 r.p.m., 150 hp. motor.

16,000 HOURS OF OPERATION WITH NO MAINTENANCE

Empire Steel Castings, Inc., Reading, Pennsylvania, installed a C-135-135H Fuller Rotary Two-stage Compressor in April 1953. After 32 months—approximately 16,000 hours of operation—the compressor received a routine inspection, when a new set of blades was installed in the higher-pressure cylinder.

The Empire engineers report no downtime since replacement, although they've added 4,000 operating hours. Prior to switching to Fuller, their former experience with compressors was a different story—as many as several overhaulings in one year. With Fuller equipment furnishing a constant high capacity air supply, production costs have been greatly reduced.

Here's how Empire uses compressed air:

- In the molding department, supplying all air for pneumatic rammers, all squeeze and jolt machines, automatic set-out and lifting apparatus of mold conveyors, automatic shake-out machines, mold cleaning and spraying equipment.
- In the core department, for ramming equipment, spraying and torch drying equipment, core oven operation as well as core blowing equipment.
- In the cleaning department, pneumatic chipping hammers and grinders, blacksmith requirements, sand-blasting, pressure testing and miscellaneous tools.
- In the heat-treating department, heat treating furnace operation and cooling equipment.

To get all the facts and engineering data, write today for Bulletin C-5A.

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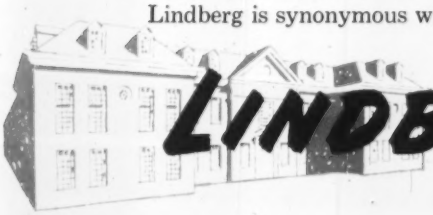
PIONEERS OF HIGH-EFFICIENCY VANE TYPE ROTARY COMPRESSORS SINCE 1930

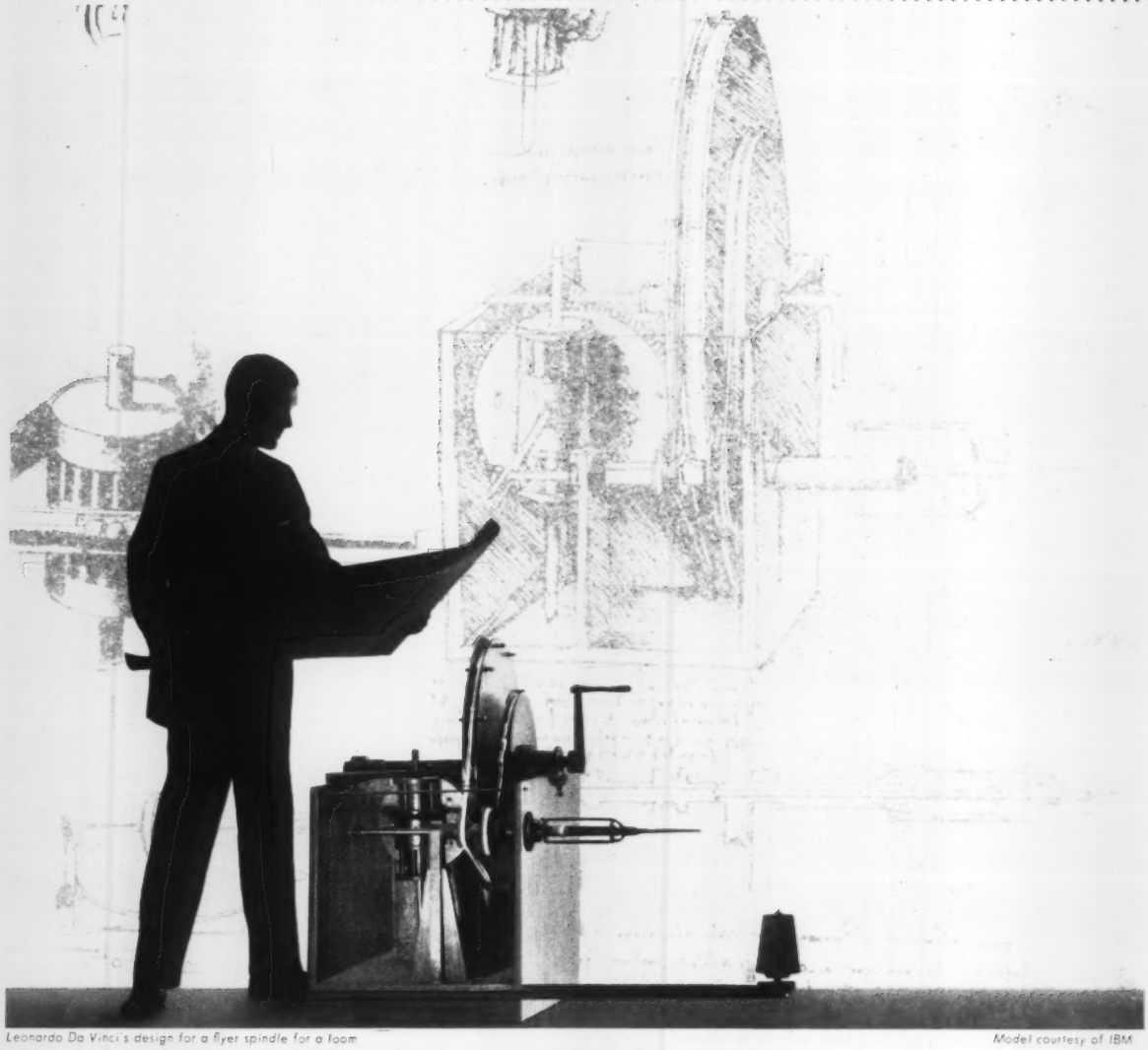
How to find a better heat-treating method

Here's a sound way to do it. Take your problems to the people who have consistently, over the years, provided the metal treating industry with new and better ideas, more efficient, more practical equipment. This will bring you to Lindberg, creators of the famous Cyclone type atmosphere furnaces, the long-life "dimple" vertical radiant tube, the revolutionary new CORRTHERM electric heating element and so many other innovations in better heat treating methods. Lindberg is synonymous with heat treating furnaces. We build them for carbonitriding, carburizing, hardening, tempering, normalizing, bright stainless annealing, brazing, carbon correction, nitriding, or any other metal treating requirement. Give your production processes the advantages of Lindberg's forward look in "heat for industry" techniques. Get in touch with your nearest Lindberg Field Representative (See classified phone book) or write Heat Treating Furnace Division, Lindberg Engineering Company, 2441 W. Hubbard St., Chicago 12, Illinois.



LINDBERG heat for industry

creative designing calls for an open mind



Leonardo Da Vinci's design for a flyer spindle for a loom — *Model courtesy of IBM*

EVEN DA VINCI'S DESIGN COULD HAVE BEEN BETTER WITH HELP FROM AN SKF ENGINEER—An SKF engineer never has to push one bearing over another, because SKF makes all four types of ball and roller bearings in over 3,000 sizes. This gives every SKF engineer the kind of flexibility he needs to keep an open mind on *any* bearing problem. Give your problem to SKF and see.

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Spherical, Cylindrical, Ball, and "Tyson" Tapered Roller Bearings

EVERY TYPE—EVERY USE

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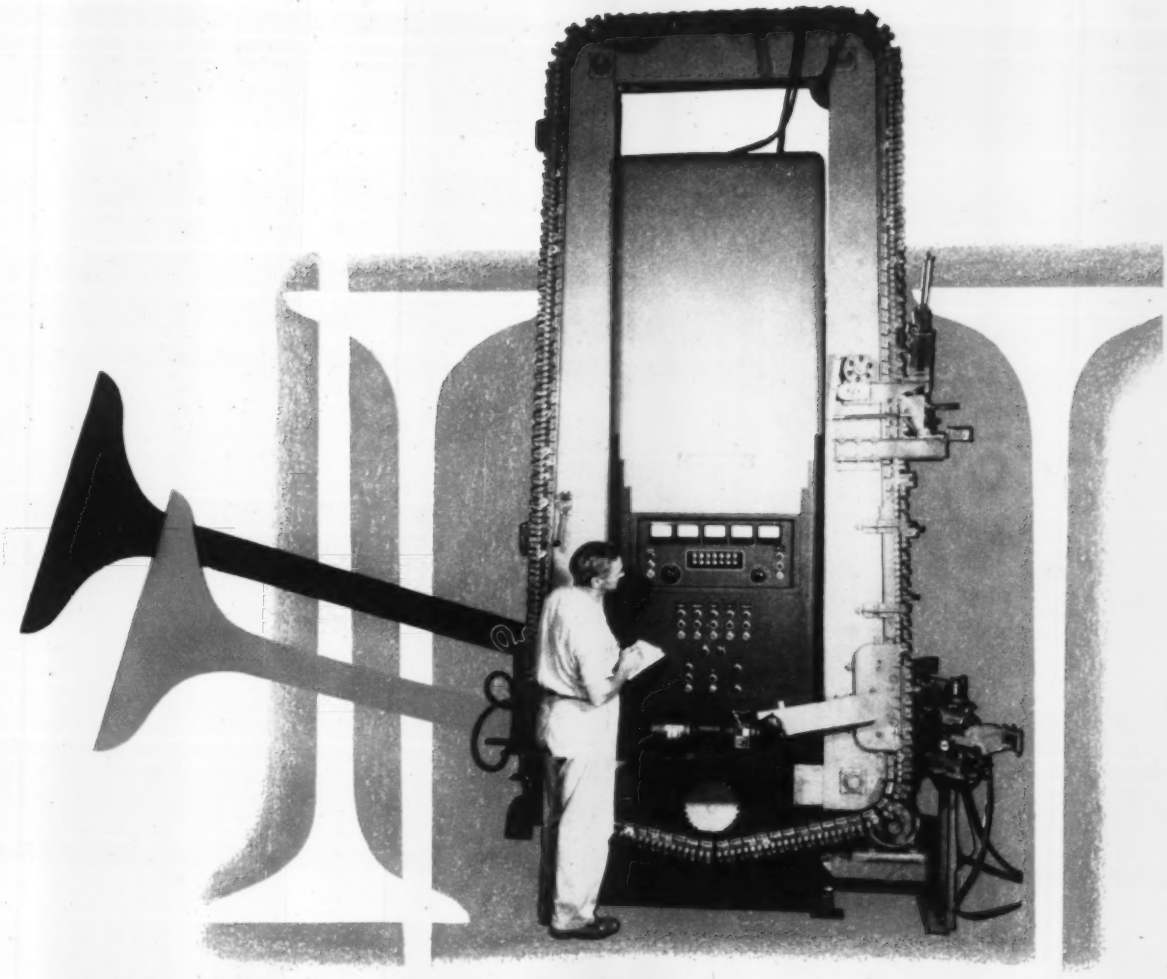

Lindberg pioneers in High Frequency Heating

Along with its pioneering in all phases of "heat for industry" Lindberg is one of the largest makers of High Frequency heating units. Our "H-F" designers and engineers have made outstanding developments in this important heat treating field. For example, we illustrate a remarkable unit just recently completed for aluminizing automotive valves. It was designed vertically, saving 60% of floor space, and is completely automatic. No operator is required. It fits perfectly into an automated production line.

Our High Frequency Division provides units for hardening, brazing, heating for forging and forming, annealing and many other processes, and designs a variety of fixtures for application to "H-F" units. Lindberg also supplies a complete line of motor generators for all induction heating and melting applications. Get in touch with your nearest Lindberg Field Representative (See classified phone book) or write High Frequency Division, Lindberg Engineering Company, 2141 W. Hubbard St., Chicago 12, Illinois.

LINDBERG heat for industry

Experience**—the added alloy in **A-L Stainless, Electrical and Tool Steels

384 pages of practical data from Allegheny Ludlum

Here's the newest addition to A-L's technical library. It incorporates the knowledge gained by being the leading producer of stainless steel ever since the industry was born, and the experience gained by working with all of the leading stainless steel fabricators.

"Stainless Steel Fabrication" is a case-bound, 384-page handbook for your *working* library. It contains the latest, detailed information on: CUTTING, JOINING, COLD FORMING, HOT FORMING, MACHINING, HEAT TREATING, SURFACE TREATING.

With 308 photographs and drawings and 121 tables, this new book suggests to old timers new ways to make operations more efficient. For newer men it's a practical textbook on all operations from working mill forms to finished parts.

If you would like to receive a free, personal copy of the 384-page handbook "Stainless Steel Fabrication," contact your A-L sales engineer. Or write on your company letterhead: *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa. Address: Dept. S-6A.*

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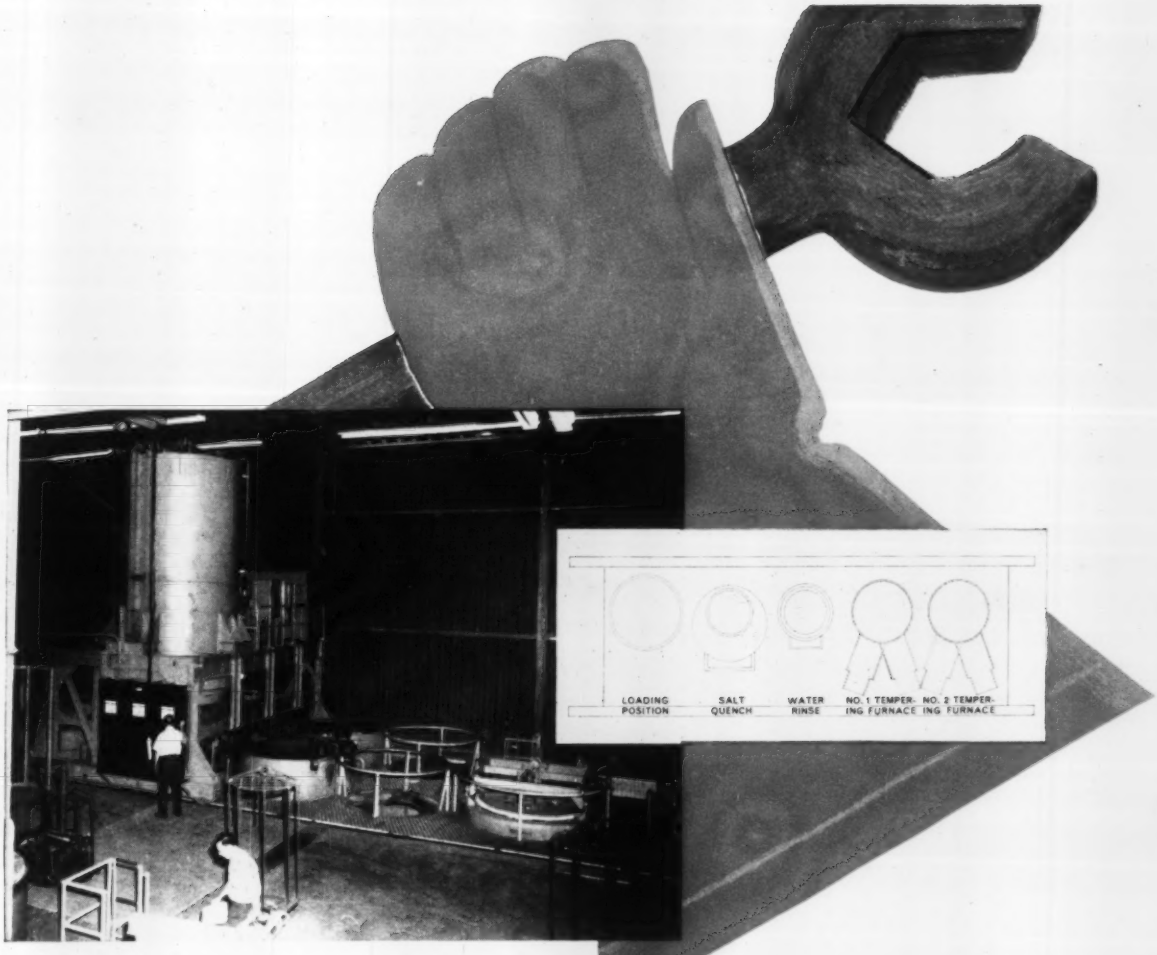
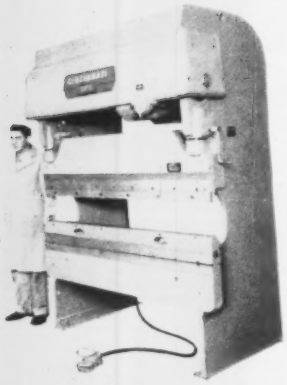
EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT



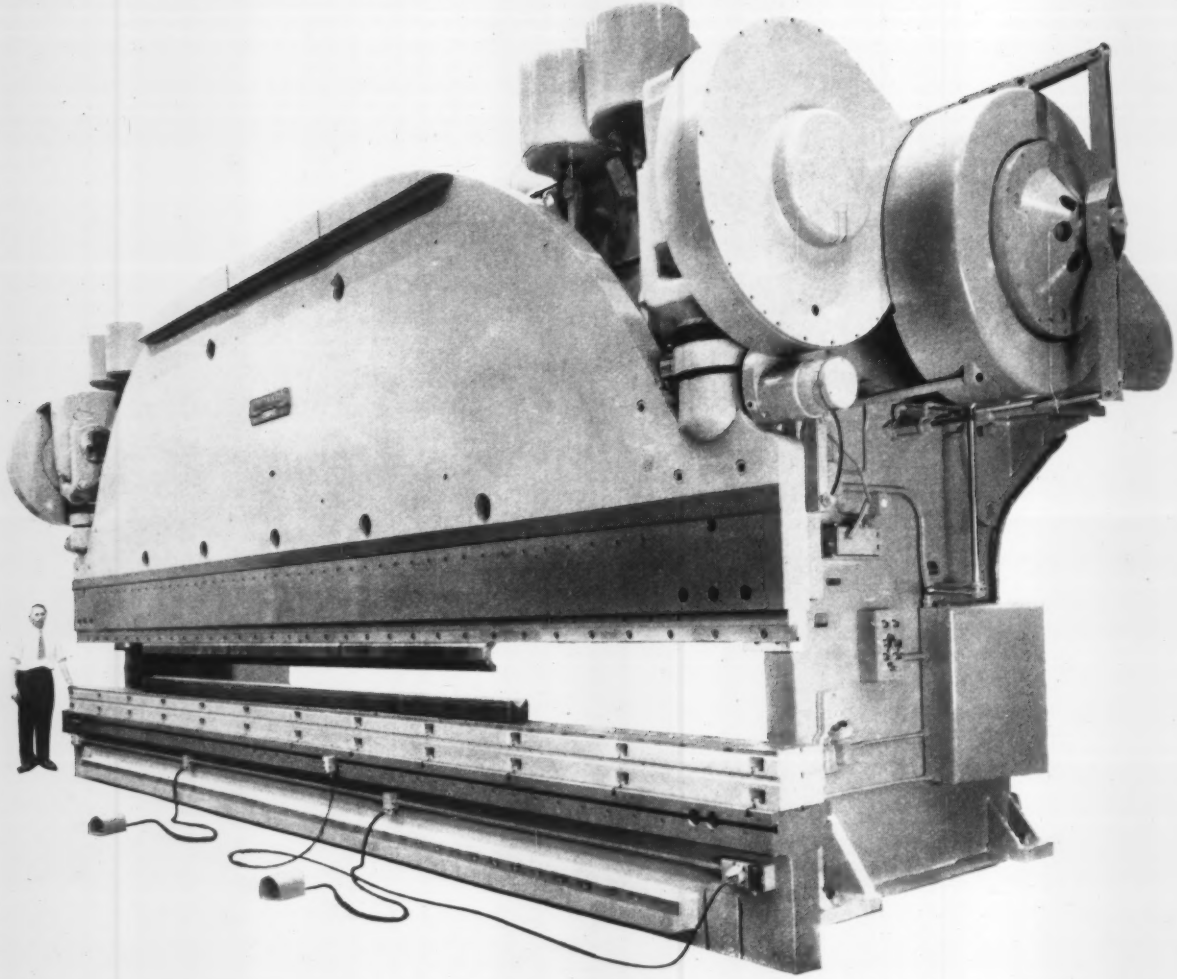
Lindberg applies the creative touch to field-installation

Here is an example of Lindberg's creative touch in field-installed heat treating equipment. Our unique design of this movable overhead furnace saved space, labor and time and increased quality and operating efficiency in missile manufacturing. We have the technical staff and the experienced engineers to design and install for you any requirement you may have for the application of heat to industry. Our service covers all types of heat treating furnaces, aluminum melting and holding furnaces, high frequency units, ceramic kilns, controls and all facilities required to fit this equipment into your production processes. We specialize in "turn-key" operations covering everything from design and engineering to the finished job installed in your own plant. Whatever your industrial heating problem, a good way to solve it is to talk it over with Lindberg. Just get in touch with your local Lindberg Field Representative (See classified phone book) or write Lindberg Industrial Corporation, 2321 West Hubbard St., Chicago 12, Illinois. Los Angeles Plant: 11937 S. Regentview Avenue, at Downey, California.

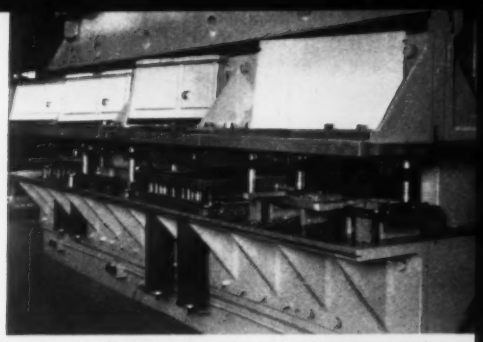
LINDBERG heat for industry



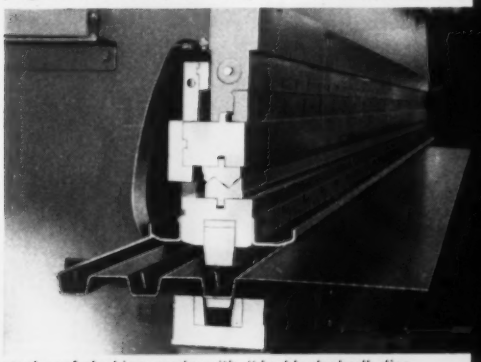
30 to 1400 tons (and up)



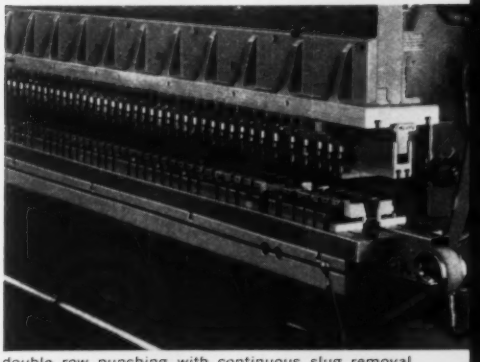
Cincinnati Press Brakes deliver maximum "earning power"



progressive die setup for refrigerator top components



steel roof decking made with "double-decker" dies



double row punching with continuous slug removal

forming corrugated culvert sections in successive hits

Alert production people are finding important new applications for Cincinnati Press Brakes—for forming, notching, punching, and multiple operations—in order to save money on existing products, or make money on new ones.

Cincinnati not only provides 15 standard machine capacities to meet your tonnage requirements, with the built-in features that insure accuracy, production, and long life. In addition, Cincinnati offers a complete tooling service:

1. Design—Our Application Engineers can help you design the proper tooling for maximum product quality and economy.

2. Manufacturing—From our large stock of die steel, our machining and assembly facilities can produce—promptly—the finished tooling you require.

3. Testing—All Cincinnati Press Brake tooling is proven by rigid tests and inspection before shipment.

We invite you to use these valuable services . . . to get more out of the press brakes you now have, or to make the most productive choice of new machines for your current and future needs.

Write Dept. C for Catalog B-5.

Shapers / Shears / Press Brakes

THE **CINCINNATI SHAPER** CO.

Cincinnati 11, Ohio, U.S.A.

Call your AIM*... Pacific States Cast Iron Pipe Co. does...

Acme Steel Strapping protects pipe shipments

Wayne Dabb works with Pacific States Cast Iron Pipe Co. to solve their product protection problems.

PACIFIC STATES CAST IRON PIPE CO., PROVO, UTAH, wanted to improve arrival condition of cast iron pressure pipe shipped in gondola cars. So they called in their Acme Idea Man.

Together, they arrived at a bracing method using heavy-duty Acme Steel Strapping that virtually eliminated in-transit damage (Idea No. U3-2). Lengths of lumber are placed on the sides and bottom of a gondola car and four lengths of strapping are laid in position. Pipe is loaded and strap is tensioned and sealed, resulting in two secure units.

Now pipe arrives in damage-free condition and is faster to unload since orderly lading presents no unusual materials handling problems or hazards for consignee personnel.

***Call your Acme Idea Man.** He has scores of time-saving, product-protecting ideas, many of which may help you. Write Dept. SDU-68, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

Weldynamics

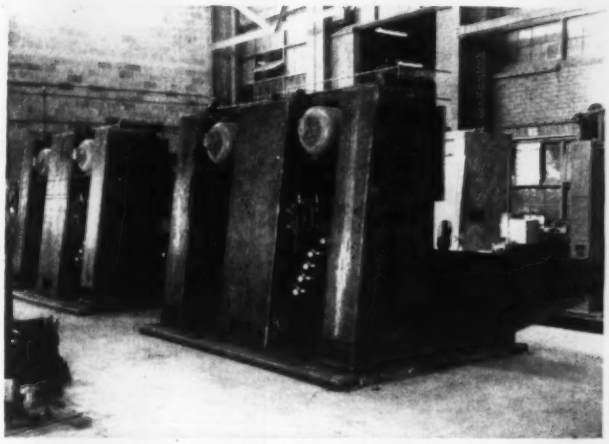
ARC WELDING AT WORK CUTTING COSTS

33-ton grinder engineered and built in 4 months . . . savings $4800 with Weldynamics

Weldynamics made possible savings of $4800 and permitted fabrication of this machine in just four months.

The savings are possible because steel is 3 times stronger and 2½ times as rigid as iron. Thus less material is needed. Pattern expense is eliminated.

Time is saved because parts can be preformed while final assembly drawings are still in process.



Belt grinder for automotive industry designed and fabricated by The Curtis Machine Corporation, Jamestown, New York.

let WELDYNAMICS cut your costs

Lincoln men, trained in Weldynamics, will help you design your product for lower costs. They will advise and recommend proper procedures, equipment and electrodes to save time and expense in fabrication.

New, 11th edition, "Procedure Handbook of Arc Welding Design and Practice" has 1300 pages, 1100 illustrations, 240 pages on machine design. $3.00 in U.S.A., $3.50 elsewhere.

Send for Machine "Design Ideas". Free to Designers and Production Supervisors.

The World's Largest Manufacturer of Arc Welding Equipment

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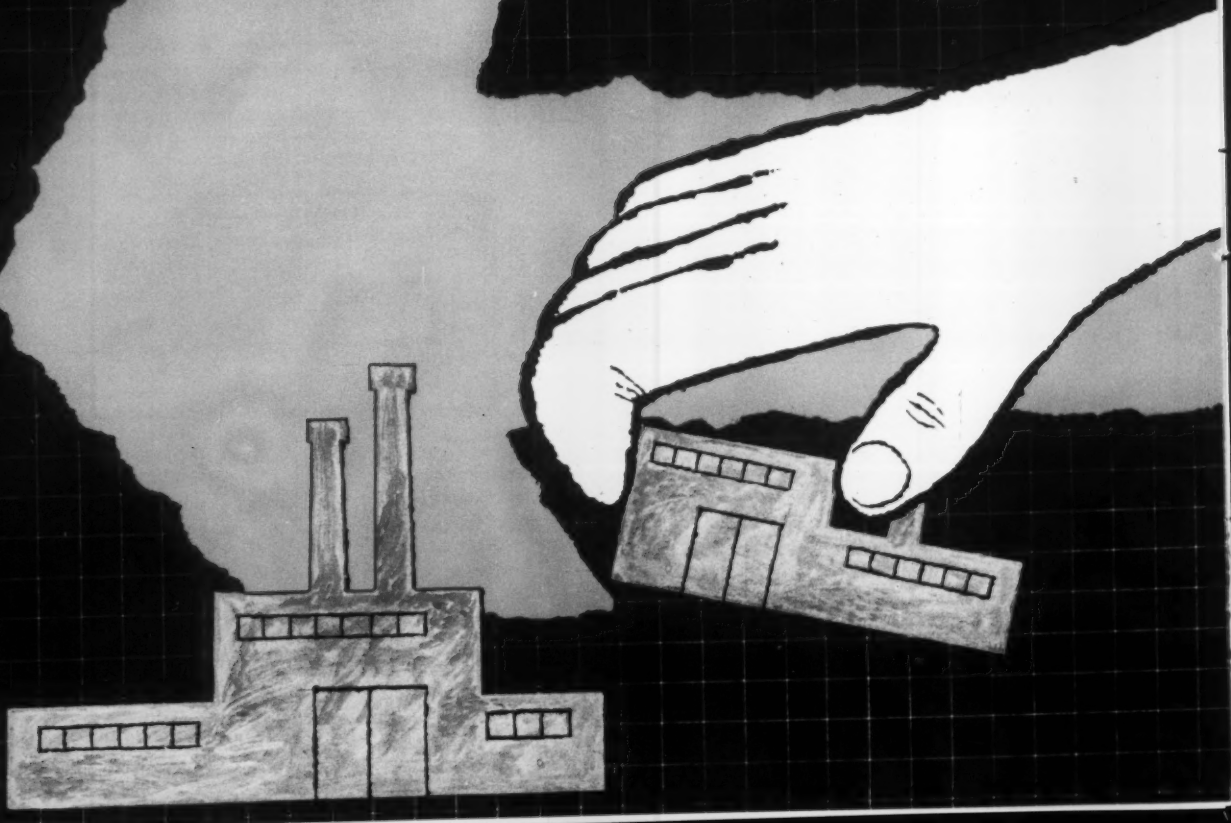
for the industrial company that wants to . .



. . grow faster than competition

To *grow faster* than competition you've got to get a *bigger* share of the market—and there you're in for a *tough* fight.

This fight will be won by the company that does the best *marketing* job.

The old tried and true "make it first, sell it second" methods aren't enough. To move more goods within industry today at a profit, you have to know your markets better than ever before—know what is needed, wanted. And you have to find a way to sell faster and more forcefully to more customers and prospects.

A big part of the answer is found in a stronger program of *two-way communication.*

Communication *from* your market gives you the information you need to set up sales goals and sales strategy. A great deal of this information has already been gathered for you. For instance: N.E.D.'s "How to Get Industrial Buying Action"; FOUNDRY's "Foundry Industry Marketing Guide"; AUTOMATION's "Confidential File"; STEEL magazine's statistical book—"Metalworking Markets in the U.S."; MACHINE DESIGN's "Geographical Analysis of the Original Equipment Market" and specific product studies.

Improved communication *to* your market lets you speed the selling process by contacting more of the right people, fast. It's the most economical way to solve the sales problems of industry's complicated group buying patterns.

Winning the readership and acceptance of the *right* people—industry's buying group—is the contribution PENTON's five selective industrial publications make to modern marketing programs.

Strengthen your own communications to the market with PENTON publications. Any Penton man will be glad to show you how high readership adds a plus value to even the best advertising campaign.

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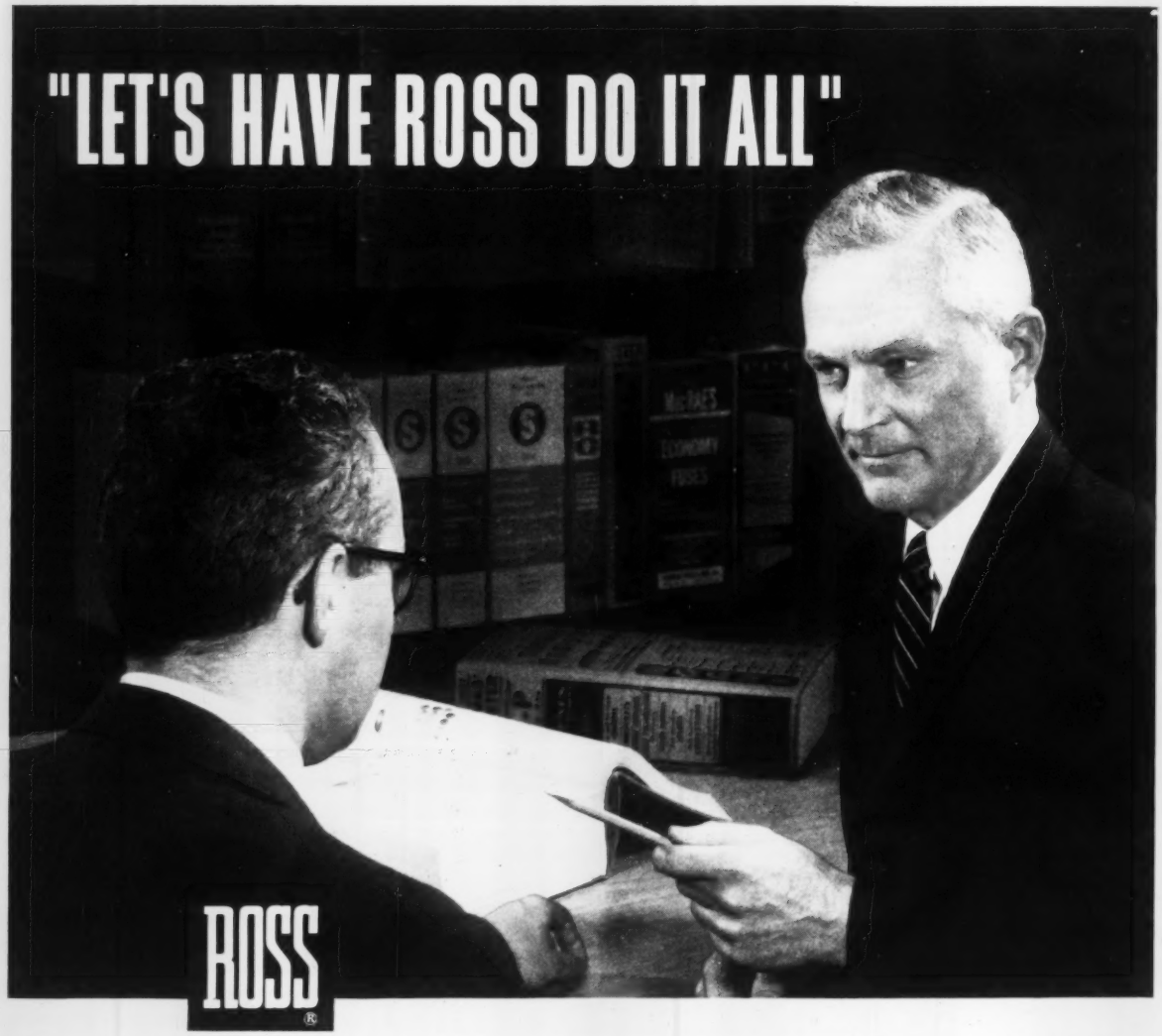

"they're the one outfit that builds every heat exchanger and condenser we need"

In heat transfer, assigning the whole project to Ross is not only the surest way to get the job done "right," but the quickest and most economical. Whether you're equipping an entire plant or a process, Ross is in the best position to assume complete responsibility and come up with carefully considered answers fully related to the total problem. Irrespective of function and condition, Ross designs and builds exchangers and condensers to meet *any* requirement.

With primary emphasis on engineering, 40 years devoted exclusively to heat transfer and well grounded experts ready to cope with *any* condition, Ross can handle the tough as well as the routine assignments for you.

Size and quantity pose no problems, either. A Division of American-Standard*, Ross Heat Exchanger recently opened a large new plant for the manufacture of giant surface condensers and other specially engineered exchangers. With smaller, standardized units being mass-produced at the original plant, Ross versatility and capacity are unmatched in the industry.

Regardless of the role of heat transfer in your operations, it will pay you and your other key management men to learn more about Ross . . . the one sure source for every exchanger and condenser you need. The full story on Ross men, facilities and products is available in our new illustrated booklet: "THIS IS ROSS — READY FOR YOU."

Write American-Standard, Ross Heat Exchanger Division, Buffalo 5, N. Y. In Canada: American-Standard Products (Canada) Limited, Station D, Toronto, Ont.

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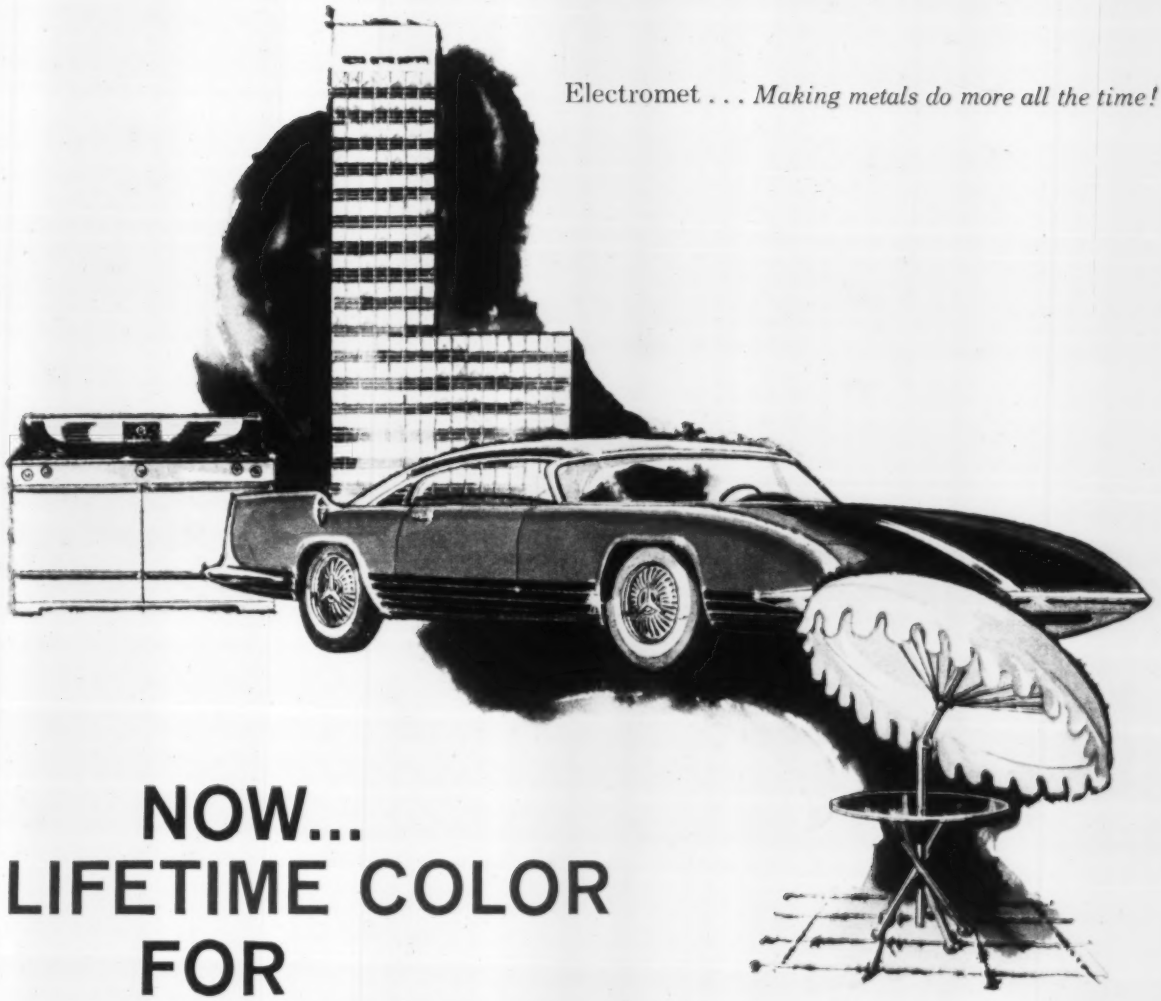
ROSS HEAT EXCHANGER DIVISION

Electromet . . . *Making metals do more all the time!*



NOW... LIFETIME COLOR FOR STAINLESS STEEL!

It's another step forward by ELECTROMET research to make metals more useful and versatile. The new PERMYRON process gives durable, decorative finishes to stainless steel and other metals. The coloring produced by this process withstands the rigors of fabrication and forming as well as the ravages of time and weather.

ELECTROMET is offering this metal-treating process to metal producers and fabricators on a license basis. A matte black finish is now available and additional colors are under development.

This process is another example of how ELECTROMET is constantly working to improve the metals of today and develop the metals of tomorrow—in ferro-alloys, pure metals, intermetallics and metal chemicals.

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Division of Union Carbide Corporation
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FERRO-ALLOYS AND METALS

UNION CARBIDE

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What kept her from falling apart?

The Statue of Liberty was once in danger.

Not from a foreign foe. Not from a crackpot's bomb. This peril was less exciting . . . *but no less destructive.*

It was corrosion—corrosion that had been at work ever since Liberty first raised her torch above the salty waters of New York harbor.

Relentless and merciless in its attack, the acrid, smoggy sea air had loosened and weakened the rivets holding the statue's huge sheet metal plates together. Miss Liberty was dangerously close to falling apart at the seams!

Something had to be done, that was clear. But *what?* Re-riveting wasn't practical. Too many hard-to-get spots in the statue.

This problem was put to an expert — a fastenings manufacturer. His solution: Parker-Kalon® Self-tapping Screws of Monel* nickel-copper alloy. Monel alloy to keep corrosion at arm's length. And self-tapping screws to pull the plates up snug and tight — from *outside* the statue!

So 65,000 self-tapping Monel alloy screws were used to "run up the seams" of Miss Liberty's robes. The job was done in 1938 . . . easily . . . neatly. And from the looks of these corrosion-resisting fastenings today, Miss Liberty's worries are over for a long time.

Do you have a problem in which corrosion is a major factor? Or wear? Or high temperatures? Or some destructive *combination* of conditions? Then look into the Inco Nickel Alloys. Their properties are described in a helpful booklet called *Standard Alloys for Special Problems.* Write for a copy.

*Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

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INTERNATIONAL NICKEL
Nickel Alloys Perform Better, Longer

STEEL

June 23, 1958

Metalworking Outlook

Watchful Waiting Continues in Detroit

Watchful waiting will probably remain the tone in the auto labor situation for the next couple weeks. The 12 unions representing 2000 employees at Ford, General Motors, and Chrysler that have agreed to extend contracts two years are minor. At Chrysler, the United Plant Guard Workers of America won additional seniority improvements in the extension. Thus far, 14 of the UAW's 124 GM locals have voted 92 per cent in favor of a strike if necessary. Ford local voting runs about the same.

Big Three Trumpets 12 Minor Pacts

GM bargains with 21 different unions, seven of whose contracts expire by July 1. The corporation has signed with the International Brotherhood of Electrical Workers (IBEW) and the International Union of Metal Polishers, Buffers, Platers & Helpers representing about 100. Among the unions that have settled with Ford are the Teamsters, the United Association of Plumbers & Pipe Fitters, and the IBEW. Ford has contracts with 16 unions other than UAW representing about 3200. Chrysler signed with the International Union of Operating Engineers, as well as with the plant guards.

Wage Boost to Date in '58: 7.19 Cents

Labor contracts negotiated in the Cleveland area since July 1 grant a weighted average wage increase of 7.19 cents an hour. Associated Industries of Cleveland says that's exclusive of fringes, such as the cost-of-living adjustment. Because of the April increase in the consumer price index, employees covered by escalator clauses in aircraft, electrical machinery, auto supply, farm equipment, and other industries will receive a 2 or 3 cent hourly boost.

SUB Payments Pruned

U. S. Steel Corp. and Aluminum Co. of America have been forced to trim 25 per cent from SUB payments in June to laid-off employees. Plans negotiated by the United Steelworkers provide that if the financial position of a company's unemployment benefit fund slips below 75 per cent of a level calculated by formula, payments shall decline to 75 per cent or less of the normal scale. Among other firms whose funds are now paying 75 per cent or less of normal SUB are: Republic Steel Corp., Allegheny Ludlum Steel Corp., Crucible Steel Co. of America, Pittsburgh Steel Co., Wheeling Steel Corp., Sharon Steel Corp., Detroit Steel Corp., Phoenix Iron & Steel Co., Rockwell-Standard Corp., and A. M. Byers Co.

Chances Dim for House Labor Law

With nearly 40 per cent of the members of the House of Representatives openly prolabor, the outlook is dim for a House labor bill similar to the reasonably tough Senate measure passed last week. When the cards are down, most representatives will be thinking about Sen. William Knowland's

Technical Outlook—Page 89 Market Outlook—Page 125

(R., Calif.) disappointing showing in the California primary race for governor. His platform included labor reform, and he barely won.

Automation Potential Great

Automation's potential has been scarcely tapped in its four main markets: Industrial, office, science-engineering, military. That's the consensus of nearly 15,000 businessmen, engineers, and military planners who attended the Fourth International Automation Congress & Exposition, New York. For the first time, the Soviet Union unveiled its instrumentation systems to U. S. observers. Reaction was that the equipment compares favorably with ours, but that it's bigger. The Russians evidently haven't our interest in miniaturization.

Canmaking: Recession-Proof?

Canmakers should produce 45 billion cans this year, compared with 42 billion in 1957, predicts William C. Stolk, president of American Can Co. One of the industry's prime targets: Soft drinks. "If we had the same percentage of the soft drink market that we have in beer, we'd sell 12 billion more cans," Mr. Stolk claims. Canco, which started a major revolution in the industry by purchasing tin plate in coils instead of sheets from the steel mills, just opened its fifth and largest coil processing center in Hammond, Ind.

Stockpile Buying To Be Cut More

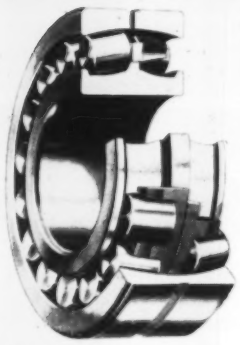
New government strategic stockpiling rules will limit buying still more. The U. S. recently stopped purchasing lead and zinc, and now it will curtail commitments for items such as selenium, mica, and amosite asbestos. It still doesn't have enough diamond dies and jewel bearings. Only 12 items are still purchased; 75 have been on the list at one time or another since the Korean War. Six representatives have dropped bills in the House hopper backing Interior Secretary Fred A. Seaton's and the Senate's proposal for a special copper stockpile. But House acceptance is less likely than Senate approval.

Missile Subcontracting Notes

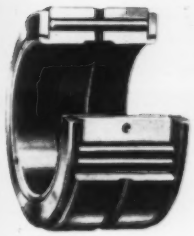
Glenn Inman, purchasing manager of Avco Mfg. Co.'s Research & Development Div., Lawrence, Mass., has a five-point program for firms wanting to crack the missile business: 1. Quote only on jobs you can handle. 2. Deliver on time. 3. Notify the prime if trouble develops. 4. Handle engineering changes without time-consuming paperwork. 5. Have a highly developed inspection system. If you want to know who's doing what missile jobs, check the Association of Missile & Rocket Industries, Washington. It offers a salesman's guide listing missile contractors and key personnel.

Straws in the Wind

Primary market prices advanced 0.2 per cent between mid-April and mid-May to 119.5 per cent of the 1947-49 level . . . E. I. du Pont de Nemours & Co. has cut prices on four chemicals used in electroplating . . . President Eisenhower has rejected Sen. Estes Kefauver's (D., Tenn.) proposals for a government-labor-industry conference to forestall a steel price hike.



from
power shovels...



to
helicopters

Torrington makes the right anti-friction bearing for every basic need!

Application requirements differ. A lightweight, high-capacity Torrington Needle Bearing is just right for a helicopter. But it's a different story with a mammoth power shovel, where Torrington Spherical Roller Bearings or Tapered Roller Bearings perform best.

Between these two examples lie all kinds of requirements. To meet the broad range of needs, Torrington makes every basic type of anti-friction bearings.

This range of experience can be of invaluable service to you in engineering your own anti-friction applications. Your Torrington representative is well qualified in your field: call on him for engineering assistance.
The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.

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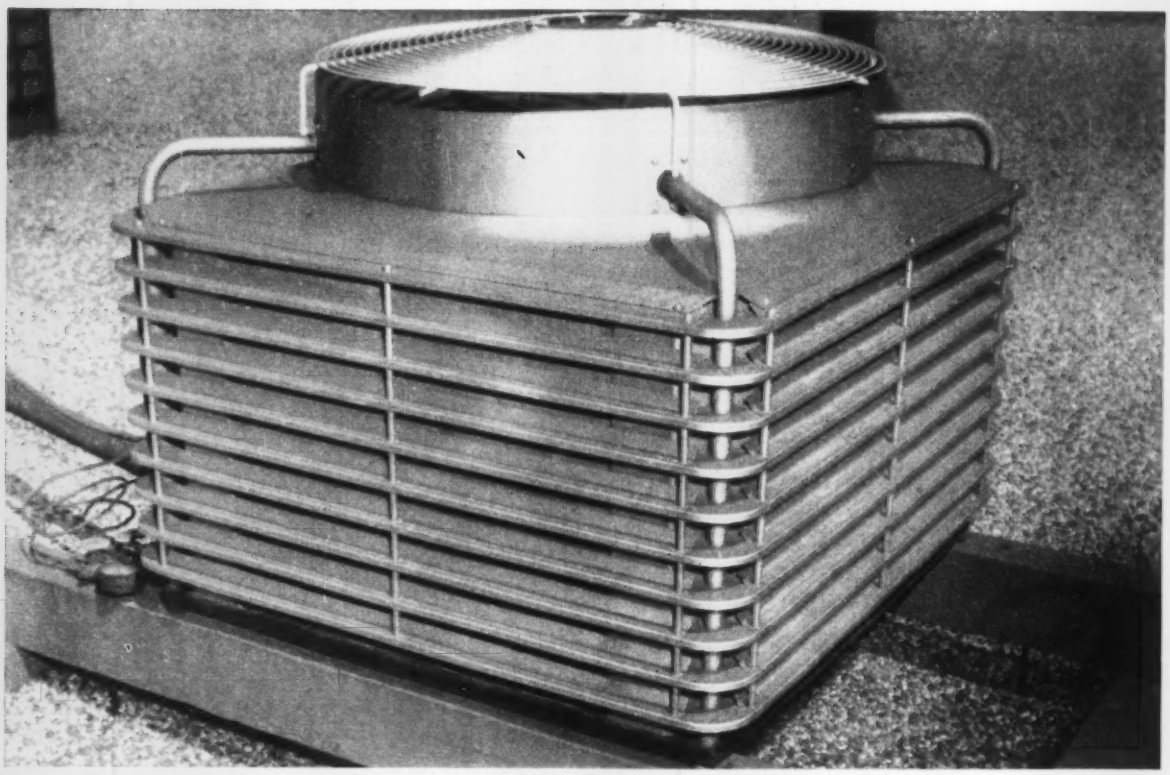


How Armco ALUMINIZED STEEL Type 2 Cut Costs and Improved Durability of Air Conditioner Housing

Special hot-dip aluminum-coated steel provides low-cost resistance to atmospheric corrosion, eliminates need for paint

A leading manufacturer of air conditioners formerly made the housings for the condenser units from cold-rolled steel. They had to be painted inside and out for surface protection and good appearance. Now, with all sheet metal parts made of Armco ALUMINIZED STEEL Type 2, *only the outside* is painted—and that because of a color identification of long standing.

Production Costs Down

Elimination of paint on the inside of the housing has reduced paint and labor costs 50%. And shop men report that with moderate care, parts can be fabricated of ALUMINIZED STEEL just as easily as with uncoated steel.

Better Durability

Originally the decision to use ALUMINIZED STEEL was based on tests which showed no rusting after 15 years' continuous exposure in an industrial atmosphere. Now service records prove that even under severe conditions the ALUMINIZED STEEL housings have lasting resistance to rust and corrosion, provide much longer service life.

Save on *your* production costs and give your outdoor products customer-attracting durability with the multiple advantages of Armco ALUMINIZED STEEL Type 2. Just fill out and mail the coupon for complete information.

ARMCO STEEL CORPORATION
1628 Curtis Street, Middletown, Ohio

Send me design and fabrication information on Armco ALUMINIZED STEEL Type 2.

We are considering it for_____

NAME_____

COMPANY_____

STREET_____

CITY_____ ZONE____ STATE_____

ARMCO STEEL

ARMCO STEEL CORPORATION • 1628 CURTIS STREET, MIDDLETOWN, OHIO

SHEFFIELD DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

Depreciation Reform

Too Little, Too Late

With Congress plodding toward adjournment, the chances for substantial reform of our archaic depreciation laws during 1958 are virtually nil. While it still is possible that some token measure will be passed, don't count on it to be more than a pale reflection of industry's needs.

In essence, if not fact, depreciation reform has failed in the 85th Congress.

Why?

First is the apathy of Congress. Many senators and representatives refuse to even recognize it as an issue. They do not understand depreciation or the need to modernize our depreciation policy. Congressmen are fearful and suspicious. They suspect that reform proposals may contain hidden boons for industry. This is an election year and congressmen recognize that depreciation is sexless in its vote-attracting power.

Second is the apathy of industry. Representations by the business community to Congress have been woefully inadequate. One congressman proposed a bill containing a fair contribution to depreciation reform but gave up in disgust when industry failed to rally to his support.

Industry can well be ashamed of its feeble efforts.

But the 1958 session was only a skirmish. The big campaign lies ahead.

About the most that could have been hoped for in the expiring session would have been a return to fast amortization as a means of stimulating the buying of capital goods and helping check the recession.

The main objective is a complete overhaul and modernization of our total depreciation policy.

That is the big job.

Congressmen must be educated. But the job doesn't start there.

The campaign must originate with strong and active leadership from industry. Support must come from the capital equipment builders and the metalworking companies which use that equipment to obtain maximum efficiency and lower their production costs. The public must be told and shown the benefits of an enlightened depreciation policy.

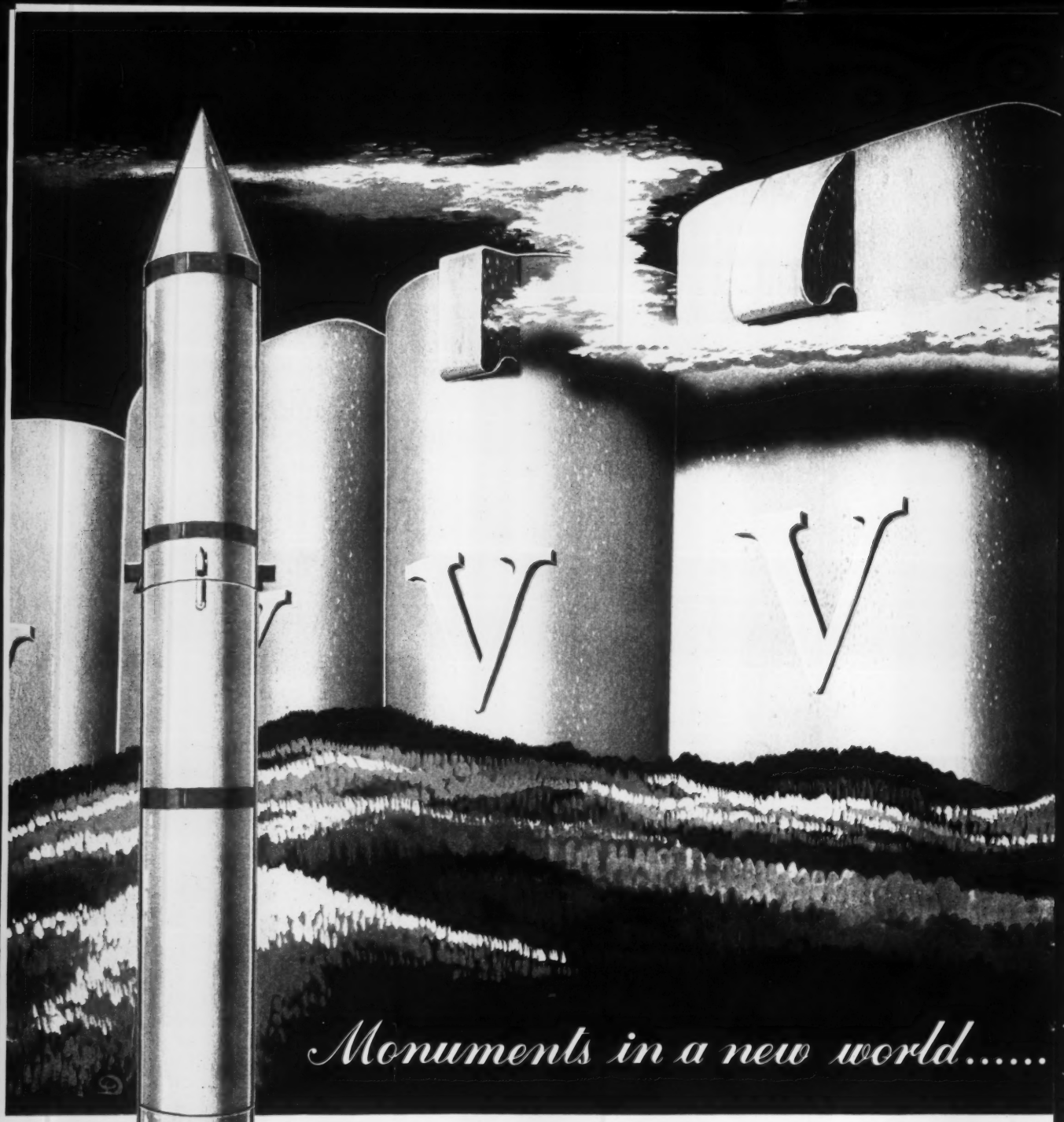
The campaign will be waged in 1959, an off year politically.

The time is now. Start a ground swell in your industry and your community.

You'll find others willing to join.

Walter J. Campbell

EDITOR



Monuments in a new world.....

Valley ingot moulds are designed for individual steel plant conditions. These moulds meet today's metallurgical requirements

VALLEY MOULD AND IRON CORPORATION

GENERAL OFFICES: HUBBARD, OHIO

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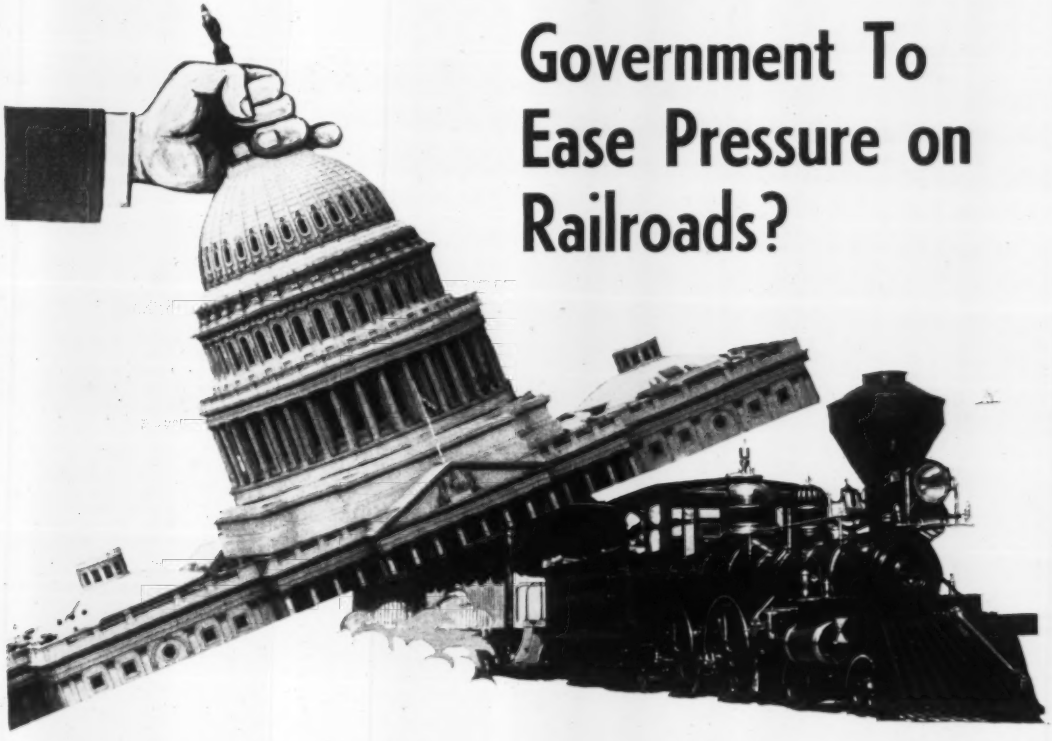


Government To Ease Pressure on Railroads?

Here's an industry important to metalworking that's in a precarious financial position. Congress may guarantee loans and loosen regulations, but more aid is needed

"THE FEDERAL government must offer some help to the sick and declining railroads or be prepared to take them over," says Sen. George Smathers (D., Fla.).

"THE WELFARE of the steel industry is dependent, to a large degree, on the welfare of the country's railroads," emphasizes William Ong, assistant to the president, American Steel & Wire Div., U. S. Steel Corp.

"RAILROADS are asking for only two basic opportunities. Those are freedom from uneconomic burdens, and freedom to compete equally," stresses Walter J. Tuohy, president, Chesapeake & Ohio Railway Co., Cleveland.

That the railroad industry is in serious financial condition is true beyond question. The same can be said about its prime importance to metalworking.

Railroads last year spent $609 million for iron and steel products, against some $613 million in 1956. You'll have to reach back a long way to find a year in which railroads spent less money for iron and steel goods than they figure on this year.

Why It Happened—The reason railroads aren't buying steel products is simple—no money. Net income for the first quarter was only $30 million, compared with $162 million in the same period last year. Even more important is the fact that for the first three months of this year railway net operating income totaled $85 million, vs. $214 million in the year-ago period. During the first quarter, 41 Class I railroads (lines with annual operating revenues of $3 million or more) failed even to earn enough to pay interest and rentals.

In the first four months, freight carloadings were 20 per cent under those in the same period last year. Railroad employment dropped in April to 828,819—lowest since 1921 and 16 per cent under last year's figure.

Depressing as the statistics are, lack of money is not the cause of the railroads' sickness. It's only a symptom and treating symptoms doesn't cure diseases. Similarly, borrowing money has not proved to be the cure-all for the railroads.

A Look Backward—There was a time in U. S. history (as every western movie fan knows) when railroads were a monopoly. If farmers didn't ship by rail, their crops rotted in the fields. The same could be said of others.

Railroads became giants in a raw nation ripe for exploitation and at least one promulgated a "public be damned" policy. Rates were set as high as the traffic would bear, but still low enough to attract shippers. Potential competitors were driven out of business merely by adjusting rates below cost long enough to bankrupt them.

But the government stepped in and shackled the giants. Regula-

Railroad Working Capital

Mar. 31, 1958	$ 337,000,000
Jan. 31, 1958	396,500,000
Dec. 31, 1957	555,300,000
Dec. 31, 1956	683,600,000
Dec. 31, 1955	938,100,000
Dec. 31, 1945	1,643,100,000

Railroad Net Income

1957	$734,000,000
1956	876,000,000
1955	927,000,000
1950	783,000,000
1945	447,000,000
1929	897,000,000

tions were adopted covering rates and service. The public was no longer damned. Under protection, it prospered. So did the railroads.

Then trucking reared its head, but rail officials ignored it. "We were either too stubborn or not bright enough to recognize competition when it finally arose," is the way one midwestern rail president remembers it.

But the trucks proved to be tough competitors and they've grown stronger each year. Air freight became a reality. Inland waterways became important in the U. S. transportation system.

The railroads were no longer a monopoly. The giants were gone.

Regulatory Shackles — Controls designed to hold a monopoly in check are no longer needed. But as is too often the case with government regulations, the rules have been perpetuated.

The result: Railroads are in immediate danger of bankruptcy. Some eastern lines are living from day to day, praying they'll have enough money on hand to meet their next payrolls.

Every railroad in the U. S. loses money on its passenger service. In only four of the last 22 years did passenger trains produce net operating income for U. S. railroads. In 1957, $764 million was lost; in 1956, $697 million. One eastern executive (exaggerating slightly) claims it would cost his road less to give each regular commuter on one of its lines a new Chevrolet each year than it does to keep the trains running.

Total net working capital, out of which is paid current expenses, totaled only $337 million on March 1. That may sound like a lot of money; it isn't in this case. It equals only about one-half of one month's requirements and about one-half the $600 million regarded as the minimum safe level.

Specific Problems—Railroad service is regulated by the Interstate Commerce Commission, by states, or both. Result: Applications for change in service are delayed, sometimes indefinitely.

Other problems faced by railroads in their fight to stay alive are:

Competition from unregulated carriers such as "artificial" private carriers. Private carriers are exempt from most regulations. To qualify, some truckers "buy" their cargo and "sell" it at the point of delivery.

Excise taxes on passengers and freight. The taxes were imposed during World War II as "temporary" measures, but no termination date was included in the legislation.

A book could be written on the problems of the rail industry and why they exist. It boils down simply: Government regulations of railroads were designed to check a monopoly and they did the job. But railroads no longer are a monopoly (they carried only 48 per cent of the nation's freight last year).

What Can Help—STEEL's recommendations are in accordance with S.3778 (just passed by the Senate). The House of Representatives is working on a similar bill.

S.3778 would authorize government guarantee of loans for $700 million up to 15 years. The rails need that. Their financial condition is such that loans are nearly impossible to get.

But the bill doesn't go far enough. Before passage, it was stripped of tax relief provisions. One section would have repealed the 3 per cent excise tax on freight and the 10 per cent tax on passenger fares. Another would have allowed creation of a construction reserve fund. Money in that fund would be untaxed provided it was used within five years for the acquisition of equipment or property "to be used by the common carrier in the transportation business."

The repeal of excise taxes may still have a chance. The Senate Commerce Committee has asked the Finance Committee to approve it.

The bill also would improve the rate-setting system. Years ago, the government decreed that rail rates must be regulated and must never be "low enough to upset the competitive balance between railroads and other forms of transportation."

STEEL's recommendation is in line with a provision in S.3778: Change the law to allow railroads (or any other carrier) to set rates as low as they please provided such rates are compensatory. That would allow railroads to compete equally and would give shippers the advantage of actual lowest-cost shipping. At the same time, it would prevent under-cost rates designed to eliminate or cripple competition.

Further Help — Also needed is stricter enforcement of law against "artificial" private carriers. The ICC (if any regulation at all is needed) should rule on any services affecting interstate commerce.

Danger Signs in 1958

Freight Carloadings	20 per cent under last year's.
Employment	16 per cent under last year's.
Earnings	81.5 per cent under last year's.
Working Capital	50 per cent under one month's requirements.
Capital Spending	34 per cent under last year's.

Passenger lines running through more than one state should not have to appear before each state board before the ICC can be approached on questions pertaining to service cuts.

Cities and states are going to have to take another look at their attitude toward railroad passenger service. It is significant that one of the country's strongest railroads (Chesapeake & Ohio) has practically no passenger service. But rail presidents queried by STEEL don't want to drop out of the passenger carrying field. They ask only the right to curtail or change service as directed by sound business economics. Cities, they say, spend millions on freeways to move people to and from the suburbs, but direct railroads to continue unprofitable commuter services until they go broke. "By God," thunders the president of one line, "if cities want the passengers carried, they're going to have to pay for it. It doesn't make sense to run trains when crews consistently outnumber passengers."

Self-Help—While it is true that railroads are in trouble and need help from the federal government —and new approaches from city and state officials—if they are to survive, it is equally true that railroad management has not been the country's most progressive.

Railroad officials, when they are being objective, will admit that they have sometimes neglected chances to help themselves.

Consolidations and mergers would help. So would joint use of facilities such as multiple terminals and yards requiring expensive interchange operations. Also needed are reduction of duplications in freight and passenger services, elimination of unnecessarily round-about routes for freight movements, and uneconomic freight car utilization.

The Fight Is On—The railroads have an opportunity to get well. Never before have so many words been spoken or written in favor of the rail industry.

City and state officials are becoming aware that railroads can go bankrupt just like any other business. Congress is in the process of giving some relief in terms of financial help and loosened regulations. It's not enough, but it's a start.

The rest is up to railroad management.

Big Uralmash plant at Sverdlovsk employs 16,000 in building steel mill, mining, and other heavy equipment. Director V. V. Krotov (second from right) addresses group which includes Delegation Chief Edward L. Ryerson (third from right) and STEEL's editor-in-chief, Irwin H. Such (right)

West Meets East

Editor-in-Chief Such reports on preliminaries to 6700-mile trip that takes U. S. delegation to Ural Mountains, Outer Mongolian border, European Russia, Crimea, and Leningrad

ANY CITIZEN of a western nation heading by air across the Baltic toward the Soviet Union from Stockholm for the first time is likely to develop a feeling of uneasiness.

That uneasiness starts when the steward of your western plane says he must lock up your camera so you can't take pictures of the USSR from the air.

It grows when your plane approaches the shores of Latvia, which you remember once was a free nation.

At this point of no return, you think (and you're sure you have plenty of company) it would be a relief if the plane turned around and headed back to Sweden.

But you are committed to visit Soviet steel plants as a member of a 19-man delegation, so you make no comment, and the plane flies on over the green countryside.

Your uneasiness mounts as you learn that the plane must fly in a narrow path at a fixed altitude regardless of the weather.

It doesn't help your state of mind when a Soviet fighter zooms up near the Moscow airport to make certain of your plane's identity.

When the steward removes all the western publications from the magazine racks as the plane approaches the airport runway, you wonder what kind of a nation insulates its citizens from the uncensored, free press.

You feel much better mentally when you are finally on the ground, greeted cordially by representatives

of the Soviet State Scientific & Technical Committee (your host), hustled through the confusion of customs and immigration and are safely on your way to Moscow in well-worn but comfortable Zim limousines.

The 25-mile drive is over a bumpy but broad highway through an area of collective farms and brushland. Creeping outward from the city are street upon street of new apartment buildings. The tremendous prefab jobs are assembled largely from precast concrete sections lifted in place by tall whirley cranes.

Your disposition improves when you are settled down in the 1200-room Ukraine Hotel overlooking the Moscow River. This 30-story monument to the Stalin era already looks old and decayed even though it was opened only last year. Another one just like it houses the Office of Foreign Affairs, and the third, unbelievably, is an apartment for ordinary Soviet citizens.

The visitor cannot help but be impressed by the big and hustling city of Moscow. It has an estimated population of 6.5 million. Its broad boulevards are paved with asphalt and kept immaculate by water tank trucks and crews of women sweepers. There are just about enough automobiles and trucks to create a traffic jam, but most Muscovites travel by bus, trolley, or the elaborately decorated Moscow subway. New apartments are going up everywhere, not only at the edge of the city but as replacements for the log shacks so reminiscent of Russia.

The first order of business for the U. S. steel delegation was a visit with the State Committee. This organization replaced the Committee on New Techniques when the USSR revamped its industrial management setup last year. It is responsible for studying and supervising the adoption of the latest developments in science and engineering both at home and abroad. It will direct the Soviet delegation to the U. S. this fall.

After appropriate remarks by U. S. delegation chief Edward L. Ryerson and the chairman of the Soviet Committee, details were ironed out for a trip that would take the Americans on a 6700-mile trip to the Ural Mountains, as far east as the Outer Mongolian border, south in European Russia to the

Soviet Russia's Goals

ECONOMIC SUPREMACY—

"The main tasks in developing the national economy are to insure—through priority development of heavy industry, steady technical progress, and higher labor productivity—the further powerful growth of all branches of industry, a steep upswing in agriculture and, on this basis, substantially raise the standard of living and the cultural level.

"With lawful patriotic pride in their country, the people feel that we now have everything needed for solving in a historically brief period, by way of peaceful economic competition, the main economic task of the USSR—to catch up and surpass the more developed capitalist countries in production per capita of population."

WORLD COMMUNISM—

"Our successes are majestic. They are all the more remarkable now that the Soviet Union is no longer the only country of socialism. Going hand in hand with it are People's China and all the countries of the socialist camp, uniting more than 900 million people. The new world is growing—the world of communism—and that world is invincible.

"It makes the capitalist plunderers tremble. And no matter how the imperialists rave, no matter how many secret or open attacks they undertake against our socialist camp, they will not delay our progress to the bright future of humanity —communism."

—N. S. Khrushchev, chairman of the Council of Ministers, USSR.

WHAT STEEL DELEGATION VISITED

MOSCOW—State Scientific & Technical Committee Central Research Institute; Iron & Steel Industrial Exposition.

NOVO TULA—Experimental steel plant.

SVERDLOVSK—Uralmash machine building plant.

CHELAYBINSK—Integrated steel plant.

MAGNITOGORSK—Integrated steel plant.

STALINSK—Kuznetsk steel plant.

ZAPOROZHE—Dnepropetstal alloy steel plant; Zaporostal integrated steel plant.

KRIVOI ROG—Iron ore mines; benefication plant; integrated steel plant.

SIMFEROPOL—Kamysh-Burun ore mine.

LENINGRAD—Ural Mechanobr Institute, Mining research.

Crimean peninsula, and north to Leningrad.

In our three-week trip through Russia, we would learn facts new to us, confirm things we already knew, and revise our thinking on others.

In future articles we will report on government, the revolution in industrial management, and what's happening in the steel and metalworking industries.

U.S. Shipbuilding Declines

Construction of ocean-going merchant vessels in U. S. shipyards (excluding government-owned tonnage) during the last half of 1957 was 11 per cent below what it was in the first half, reports the American Merchant Marine Institute.

During the six-month period, the nation fell from sixth to seventh place in world merchant vessel construction.

Included in the 3.2 million deadweight tons now under construction in our yards is the nuclear powered passenger vessel, the *N. S. Savannah*, which is scheduled to be in government service by 1960.

The AMMI also said the United Kingdom regained first place in merchant vessel construction from Germany, even though her tonnage on order dropped since mid-1957. The UK had 16.2 per cent of the world's orders on Jan. 1, 1958.

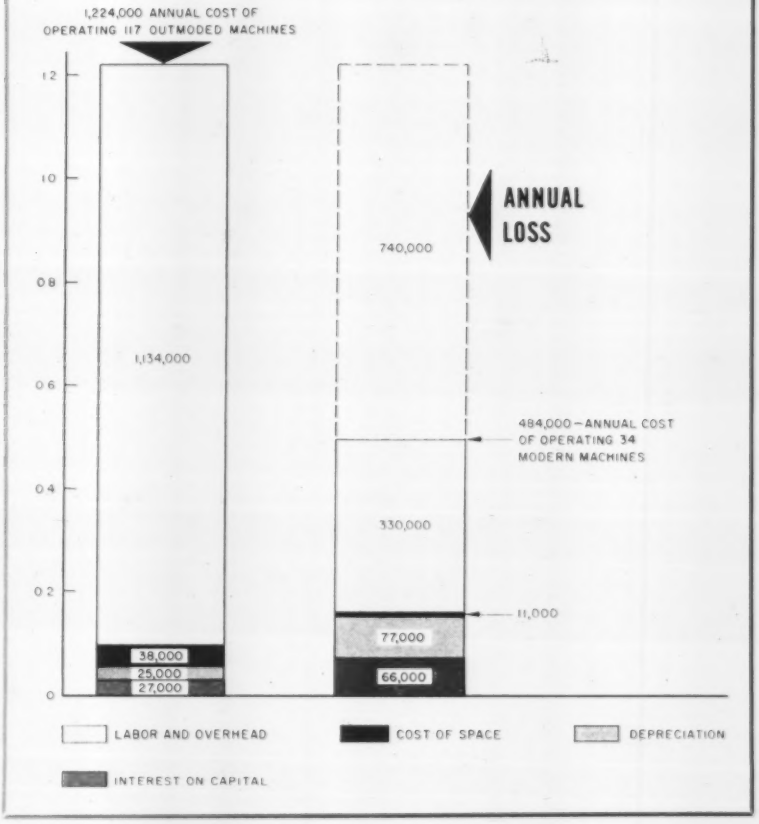
Japan also moved ahead of Germany by increasing her percentage to 16.1 while Germany, in third place, held 15.7 per cent of the world's construction orders.

Revenue and Profit Sink

Total revenue of U. S. iron and steel companies in the first quarter, 1958, was about 33 per cent under the same period last year. Net income declined about 58 per cent, says the American Iron & Steel Institute. Companies' earnings averaged 5 cents on the sales dollar compared with 8 cents in the first quarter of 1957.

American Iron & Steel Institute data are based on reports from companies accounting for 93 per cent of U. S. steel output. Sales by participating companies in the first quarter hit $2.7 billion ($4.1 billion a year ago). Net income totaled $135 million ($323 million in 1957).

Navy's Comparative Cost To Keep Outmoded Vertical Turret Lathes



Computation based on 8-hour daily usage.

Price of Not Re-Equipping

HARRY PHLUNTZ blew his top on Monday night when Mabel, his working wife, proposed buying an automatic kitchen range for $795.

He thought it over more carefully on Tuesday night after Mabel had revised the proposition to show how it would pay for itself in two years through savings: They wouldn't have to eat out two or three evenings a week. On Wednesday night, he told Mabel to buy it after arithmetic revealed that he had lost $2000 in the last five years because he hadn't re-equipped the kitchen.

Industrial Parallel—American industry is losing billions every year because it isn't re-equipping its plants fast enough. To figure the

bill exactly is like trying to calculate how high is up. But up is plenty high in this case.

Some indications of just how high: The American Society of Tool Engineers estimates that upwards of 15 million tons of metal are annually converted into chips in the U. S. alone, at a cost of more than $10 billion. Equipment and processes are available to do the job at lower labor costs and at less expense in material wastage, but conversion is slow. A Navy study of 12 of its shore industrial installations with $150 million worth of machine tools showed that it should have been spending a minimum of $7.5 million and a maximum of $12 million per year in re-equipping. The best it has done in recent years is $1.5 million annually, and often the figure has dropped to less than half that. If this continues, says Navy's Bureau of Ships: "Maintenance costs would progressively increase, with resultant lower productive efficiency and a waste of floor space and skilled manpower."

Cost Conscious—The Navy must resort to examples and graphics (as in the accompanying exhibit) to convince penny-pinching congressmen of the need for higher appropriations. But some top management men in metalworking are also guilty of being penny-wise and pound-foolish if you judge by the difficulty capital equipment builders find in selling today.

Cost Crisis—Fortunately, not all management is blind to the cost crisis and to the way to beat it. STEEL's Cost Crisis campaign has, since its inauguration in February, turned up dozens of examples of how companies have lowered unit production costs through the use of new or revamped equipment; 26 more will be published beginning July 7. They all show that new or revised equipment was purchased because that action was cheaper than staying pat with old facilities. Here are three more cases in point:

Esterbrook Pen Co., Camden, N. J., transformed its line for making pen nibs (the metal part of the pen point) to reduce costs 39 per cent since 1947 and to permit higher production that made plant expansion unnecessary.

A manufacturer of automotive accessories bought three Barber-Colman hobbing machines for $35,000 (including some extras). He expects to save $7022 during the first year's operation because the three new machines will replace six that formerly did the job.

Vauxhall Motors Ltd., General Motors Corp.'s subsidiary in England, uses a Norton Multi-Wheel Grinder instead of conventional grinding methods which enables it to produce 80 camshafts an hour, vs. 30 by other devices.

Where To Look—How did Esterbrook, the auto accessory maker, and Vauxhall find those ways to cut costs? Salesmen's calls help, and a chance discovery of some inefficient operation may have unearthed a possibility. Yet, the best way is systematic study of your equipment. But what if you have 1000 machines on the floor? It's not humanly possible for one or even several men to know what is the best model available for each operation.

The job can be simplified. Group the machines. For a battery of the same model doing the same work, a decision on one is a decision on all. Ignore all machines that have been installed within the last two or three years, depending on the operation. Check maintenance records for replacement candidates. Read the business papers; go to conventions; make a note of areas where changes are coming rapidly and watch them with special care.

Make a quick preliminary calculation on a promising replacement. Sometimes, the savings on direct labor, alone, will return 100 per cent on the investment the first year. Why look farther?

Marvin J. Barloon, professor of economics at Western Reserve University, urges that we not bias our thinking by looking for benefits of a replacement only in one department. He gives an example of a steelmaker who replaced a roll contour lathe with a new one costing $40,000. The new lathe didn't save a dime in performance of the work, but it permitted a finish with a shallower cut and saved its price in a little more than a year by conserving the chilled surface of the roll.

How To Compare—The process of comparing new machines with old can be worked out with formulas. STEEL has one (June 20, 1955, p. 99) based on the Machinery & Allied Products Institute's, developed in *Dynamic Equipment Policy* by its research director, George Terborgh. (An updating of Mr. Terborgh's work is now available.)

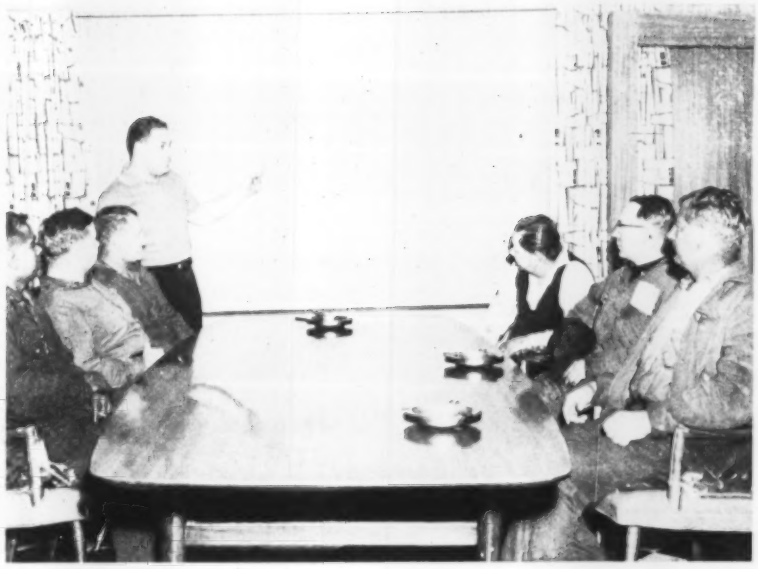
No formula or thoughtful appraisal will turn up every replacement possibility in your plant. This general rule should help tell if you're missing many opportunities: You should be annually spending 5 to 15 per cent of the total valuation of your equipment in current dollars for re-equipment. The lower figure turned up in 1953 as the admittedly conservative estimate of the old Vance Committee, the government's advisory group on production equipment. Progressive industrial management sets aside 8 to 15 per cent annually to take care of replacement.

Do that and you will keep your cost of not re-equipping at a minimum.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*

COST CRISIS COMPETITION

This article is part of a campaign to help industry achieve lower unit production costs. Selected entries in STEEL's Cost Crisis competition will be published in STEEL beginning July 7. Deadline for entries was June 15.



Employee committees at Great Lakes Carbon prove that . . .

Safety Saves You Dollars

WHAT WOULD you do if your employee accident rate was more than twice the national average?

Great Lakes Carbon Corp.'s furnace electrode plant in Niagara Falls, N. Y., had to answer that question. It had 25.1 disabling accidents per million manhours worked in 1954. The Department of Labor's national industrial average was 11.9.

Action: Great Lakes launched an extensive safety program in 1955 to trim the accident rate. Object: Slash insurance costs, downtime, and damage to equipment, while boosting employee morale. Result: In 1957, the plant's accident rate was 80 per cent under the national average.

Find the Causes—A survey determined what caused accidents, under what conditions they occurred, and what types were most frequent. Handling materials was the number one hazard (48.5 per cent). Plant operations required manual handling like rolling and stacking electrodes. Solution: Teach employees proper lifting techniques, how to handle cranes, and how to recognize hazards.

The survey showed that most injuries were to eyes (34 per cent) and to hands or feet (38.7 per cent). Cure: 1. All employees' eyes were examined, goggles were issued, and free prescription goggles were supplied where needed. 2. All employees were required to wear safety shoes, supplied at cost. 3. Gloves, skin creams, boots, and other protective equipment were issued where needed.

The survey found: 82.5 per cent of all accidents were caused by employee acts; 8.4 per cent resulted from unsafe conditions; 6.4 per cent rose from unsafe equipment; 2.7 per cent had miscellaneous sources. So employee education became the plan's primary target.

Educate Employees—New employees learn safety practices through a plant indoctrination course before they're assigned a specific station. Workers get on-the-job instruction. Supervisors closely enforce safety regulations.

The heart of the program:

- Plant Protection Council. Members: Plant manager, safety supervisor, department heads. Meetings: One every three months. Duties: Form policy, initiate new projects, review progress.
- Foremen's Safety Committee. Members: All foremen, safety supervisor. Meetings: One a month. Duties: Study ways to strengthen the program, with emphasis on good housekeeping, use of protective equipment, and keeping workers interested.
- Departmental Safety Committees. Members: Hourly workers and plant safety supervisor. Meetings: One a month. Duties: Initiate ideas for new safety practices and the elimination of hazards; act as a sounding board for programs proposed by management; voice worker attitudes. Any committee member can recommend policies or procedures to top management.

Interest Workers—Workers take an interest in the program because it belongs to them and everyone has a chance to participate, says the company. Safety is not put on a casual "be careful" basis but is an integrated part of the plant operation. To further stimulate the safety philosophy, departments compete with each other for the best record to win a plaque. Individual winners receive appliances, sporting goods.

Count the Results—Injuries fell from 25.1 per million manhours worked in 1954 to 2.3 in 1957. From 1955 to 1956: 1. Manhours worked increased 17 per cent. 2. Medical treatment cases dropped 13 per cent. 3. Disabling or lost-time injuries fell 26.5 per cent. 4. Days lost per disability fell 18 per cent. 5. The accident frequency rate declined 37.1 per cent.

Obtain the Benefits—The company has cut uninsured accident costs from $15.50 per thousand manhours worked in '54 to $7.10 in '57.

Substantial savings in insurance costs are anticipated, but they won't show up until 1959 when premiums are revised under workmen's compensation loss experience ratings.

Other important benefits that can't be counted in dollars: Morale has improved. So have relations with the union. Labor turnover has dropped while employee productivity has gone up. Community relations have improved.

Army Fights for Its Life

DEFENSE Department reorganization doesn't bother as many highly placed Armed Forces officers as you might think. Any service officer is certain that his service will remain an individual unit when the political hassle dies down. What concerns Navy captains and Air Force and Army colonels, the future admirals and generals, is how technology is affecting their services.

Within the Navy, you have submarine and aircraft carrier biases; in the AF, bomber and missile proponents; within the Army, a deep seated suspicion that the powers that be, public opinion, and time itself are working to destroy the service. The Army is fighting for its life by speeding up the activities of its Ballistic Missile Agency at Redstone Arsenal, Ala., and advancing the conception of the Strategic Army Corps. STRAC is a paper organization of three airborne units and two infantry divisions which the Army touts as our ready force for limited or brushfire wars.

Basically, what the Army has to sell the National Security Council, the State Department, and the public before it can hope for better treatment from Pentagon budget officials is the strategy of accepting the so-called atomic stalemate between East and West and preparing to fight either conventional or tactical atomic wars.

With a Little Congressional Help

Sen. Ralph Flanders (R., Vt.), who is retiring, has become a focal point of Army interests on Capitol Hill. In a series of speeches on our defense policy, he has pleaded that we accept the atomic stalemate and stop relying on the concept of massive deterrence as a weapon of foreign policy. While he grants the Army only a mission of "minor importance" in the atomic era, he points out the significance of containing limited wars and asks that the Army "be prepared to use conventional arms or tactical atomic weapons." He sums up: "The world must know that the massive atomic attack will not be employed for a local situation." He limits the mission of the AF in small wars to "tactical support" of the Army with light bombers and transports. He's asking the American public to resign from its traditional policy of gaining an unconditional surrender before ending a war.

How deeply the senator is affecting Congressional opinion cannot be ascertained before the fiscal 1960 defense budget comes up to the Hill next January. But if enough opinion leaders rally around his ideas, you can expect important changes in that budget, compared with the heavy Polaris Sub-ICBM bias of the 1959 effort.

Planes and the Antimissile Missile

Over a year ago, a $6-billion program for antimissile missiles came from Army long range planning groups to the joint chiefs of staff. Recently, an $800-million program for 100 jet transports has been suggested to enable the Army to move fast in a local war. On the negative side, the Army is trying valiantly to convince the chiefs that billions to be spent on hard (not mobile) ICBM bases for the AF in this country will be wasted because they can be zeroed in by an enemy or even sabotaged long before the first attack. With tactical atomic weapons, the Army points out, the need for a vast ship supply train to a war scene will be minimized.

So far, the arguments have made little impression on the chiefs. But there does seem to be a tendency for more highly placed Washington sources to think of the defense budget of the 1960s in these terms:

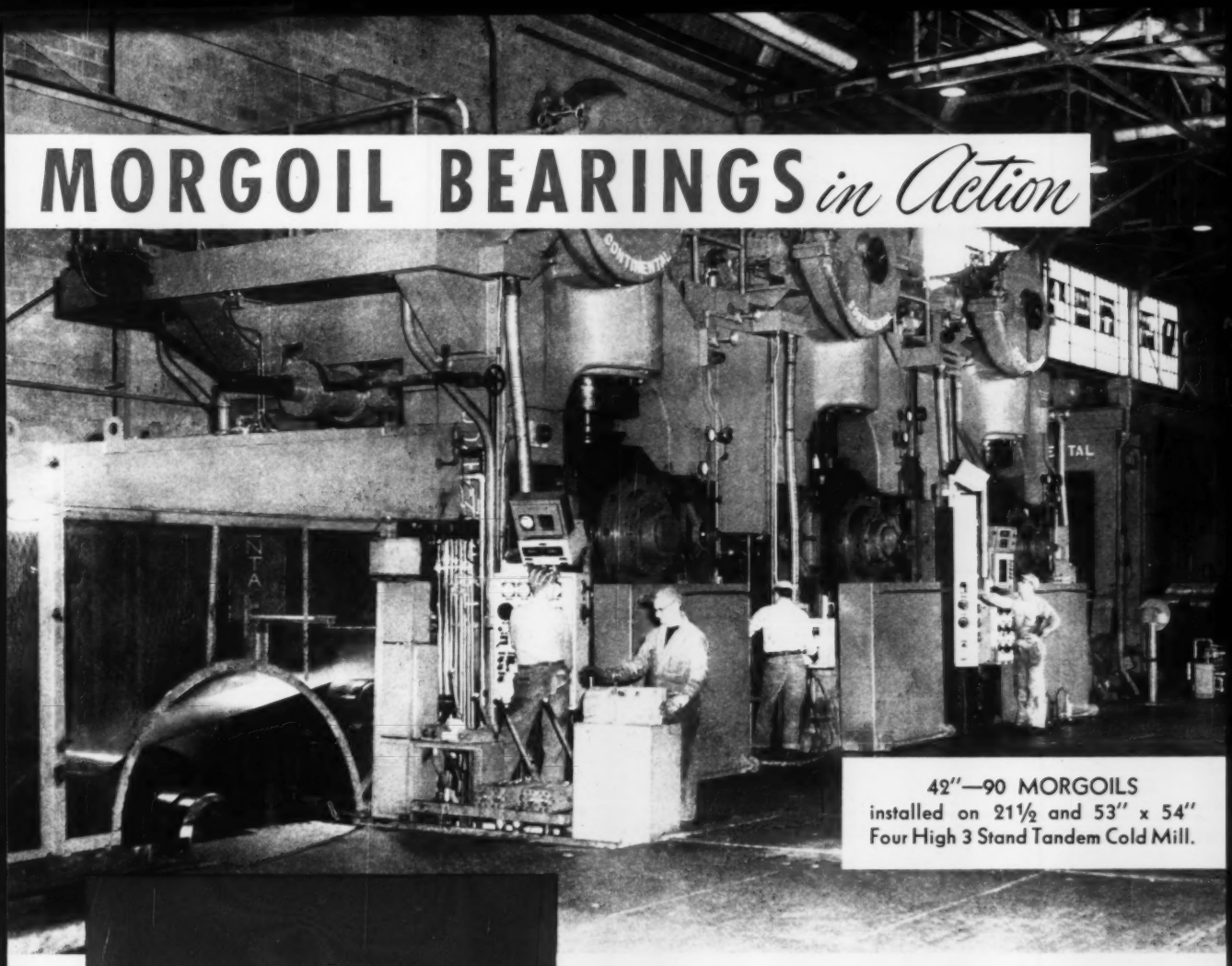
1. Making the Navy's role more defensive than offensive by spending more money on antisubmarine efforts and disregarding schemes for 100 Polaris-firing subs.
2. Boosting the Army's air capabilities by spending more on helicopters and small fixed wing aircraft.
3. Moving the AF into the manned spacecraft era faster with the idea that reconnaisance satellites and space stations will contain the ICBM threat.

Duplicating Space Projects Set

Two teams of missile-aircraft manufacturers will slug it out in the next couple of years to win the contract for the nation's first manned spacecraft. Boeing and Martin have been granted development contracts for project Dyna-Sour, an advanced version of North American's X-15 project, which is scheduled to achieve an altitude of 100 miles next year with a man aboard. Dyna-Sour will be capable of circling the earth and landing at a predetermined point.

Boeing's team includes: Aerojet-General, Chance Vought, North American, Ramo-Wooldridge, and GE. Martin's includes: Bell Aircraft, AMF, Bendix Aviation, Goodyear, and Minneapolis-Honeywell. A joint proposal made May 2 by Convair and Avco is still under consideration. Prediction: Convair and Avco will also get a development contract this year to give us a three-way race. Preliminary cost estimates rate either Dyna-Sour or the Convair-Avco program at about $100 million.

MORGOIL BEARINGS *in Action*



42"—90 MORGOILS
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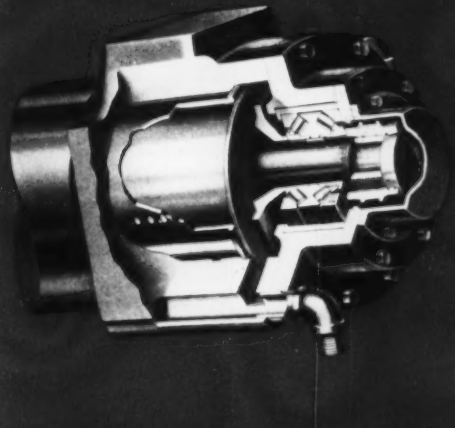

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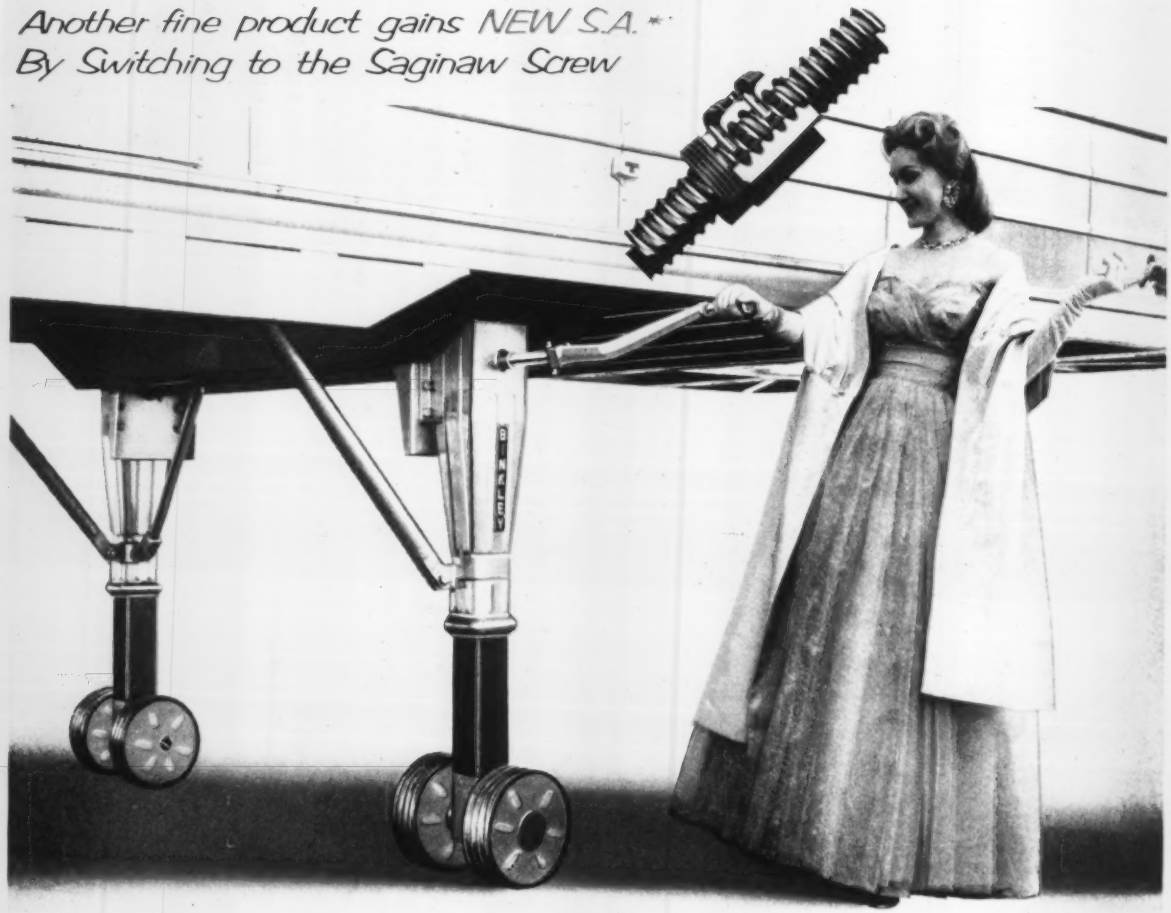


WORLD'S MOST EFFICIENT ACTUATOR OPERATES TRAILER LANDING GEAR WITH 5 TURNS PER INCH INSTEAD OF 20

It's "happy landings" for truckers from now on—since Binkley Manufacturing Company has developed and marketed a new truck trailer landing gear which can be raised with 75% less cranking. They gave their product this new ***S**ales **A**ppeal by switching from a high-friction acme screw to the almost frictionless Saginaw Screw.

The truly amazing ability of the Saginaw Screw to convert rotary motion to linear motion with *over 90% efficiency* is saving power, space, weight and assuring smoother, more dependable performance in countless products from miniature electronic controls to giant production equipment.

Perhaps the Saginaw Screw can give *your* products that vital new **S**ales **A**ppeal you're looking for right now. To find out, write, wire or telephone Saginaw ball/bearing Screw Operation, Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan—*world's largest producers of b/b screws and splines.*

*Give your products NEW SALES APPEAL... switch to the Saginaw ball bearing Screw

Consumer Leasing Can Mean:

Appliances have an average life of about ten years. Market is close to saturation. Replacement every two years under leasing would multiply sales by five over same period

LONG TERM LEASING, as opposed to outright sale, is emerging as a challenge to marketing executives.

The concept of a leasing economy as an alternative to planned obsolescence in maintaining market turnover is attractive to many (such as appliance makers). The reason: The market for refrigerators is about 95 per cent saturated and units have an average life of ten years or more.

"Why shouldn't we rent an appliance, then trade it for a new one when the manufacturer comes up with something better. Hopefully, this would give housewives consistent improvement in their appliances and manufacturers a self-renewing market," says Henry Dreyfus, designer.

Working with Autos—As evidence to support their case, proponents point to the growing auto leasing business. An estimated 200,000 passenger cars are being leased (excluding cars rented for periods under six months).

Courtesy Motor Sales Inc., Chicago, Ford dealer, has a leasing program aimed at individuals. "On a two-year plan, a low price car leases for about $100 monthly. Included are license tags, $50 deductible insurance, and all repairs. The lessee buys only gas, oil, and lubrication," explains J. E. Lesniak, vice president.

Most individuals leasing cars gain a tax advantage (physicians, salesmen, contractors, and small businessmen can deduct auto costs as business expenses).

Not Much Otherwise — Autos aside, long term leasing doesn't have much foothold. There are exceptions, but they're hard to find.

Polk Bros., Chicago discount house, will lease anything. "But it's just another customer service," officials hasten to say. "We don't do much of it, but freezers and air conditioners are most popular. Hunters and fishermen want the freezers. Small businesses and professional people are leasing the air conditioners yearly for flat monthly fees which include servicing."

A Needed Boost — Joseph J. Thursh, vice president, Design Dynamics Inc., Chicago, suggests four ways to give impetus to consumer goods leasing:

1. Develop mass distribution methods to match productive capacity. A metropolitan area such as Chicago doesn't need 425 new car dealers, Mr. Thursh believes.

In such an area, he envisions a dozen giant auto centers. Cars will be leased in a package deal including insurance, licenses, and rapid service and repair. Mass production economies can also be realized in mass distribution, he asserts.

2. The prestige factor found in the automobile business will have to be extended to other items if a leasing economy is to work satisfactorily. That might, Mr. Thursh says, limit leasable goods to higher priced items.

"Appliance makers haven't established any such status. No price differential exists between two refrigerators as exists between a Ford and a Lincoln. It can be established by upgrading the functional as well as design qualities of appliances."

3. Consumers will have to be convinced that advantages of "control" of goods outweighs pride of ownership. Renting should widen areas

of what individuals "can afford."

Coincidental is the need to overcome the social stigma attached to buying or leasing used goods. That stigma is real for many consumer items, but has never applied to the auto market. Result: The used car business has been a powerful force in expansion of the auto industry. In contrast: All attempts to establish a used appliance market have failed.

But "bring out a $1500 refrigerator with desirable qualities not available in a $300 model and a substantial used appliance market would develop," Mr. Thrush avers.

4. In a leasing economy, the customer will demand a rental package including efficient service and maintenance. Part of the lure of auto leasing is that lessees don't have to worry about service and repairs.

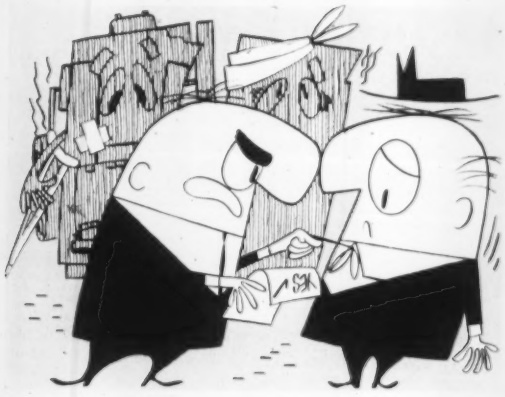
Keep Watching It—Most manufacturers agree planned obsolescence, at least in major consumer items, is not the answer to increased market turnover. Ethics aside, redesigning and retooling are expensive.

"Consumer goods leasing definitely offers a new marketing possibility," concludes Mr. Thursh. "It will evolve under the same stimulus that has always sparked industry—trying to provide better goods and services for more customer convenience, enjoyment, and satisfaction."

A Word of Caution — Leasing sounds good, but consumers would be faced with some hard facts. Goods will cost more when leased on a long term basis instead of purchased even though initial outlay will be lower. Persons moving from one city to another may run into complications in obtaining permission to move leased items, or be denied that privilege.

Dealers will also have problems. They'll have to develop markets for used appliances if they're to be prevented from glutting the market. They'll have to convince consumers that benefits of leasing outweigh its higher costs. Most will also have to increase the size of their service departments. Customers will tend to call for service more often when it's included in the price of the lease.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.*



Depreciation Policies under Fire . . .

Users Demand

PRODUCERS of capital equipment have voiced hearty approval of STEEL's program for depreciation reform (see STEEL, April 28, p. 55). They want the laws changed to revitalize their recession-plagued industry. But what about the users of capital equipment? Is depreciation reform an issue of major importance to them?

STEEL put that question to executives of small and medium sized metalworking firms around the country last week. Their answer: A resounding "yes." Many of them placed it at the top of their list of "things we need most." One said it would be "of far greater importance than any income tax cut being talked about." Another called it, "a most constructive step toward overcoming the recession." Many said they would definitely buy new equipment now if they could amortize it in five years or less. Here are some of their comments:

To Start a New Boom

"I propose that all businesses be allowed 10 to 20 per cent of their profit tax-free for one fiscal year. That money would have to be used to purchase new plant and equipment within 12 months. If not, it would be taxed. During that time, a realistic depreciation system should be set up. And the money spent for capital goods would turn this recession into a boom.

"I would like to buy a new upset forging machine from National Machinery Co., Tiffin, Ohio. It would cost $70,000. But like other businessmen, after I pay my income taxes, there's not a hell of a lot left to buy equipment. And since present depreciation rules don't take inflation into account, money to buy new equipment has to come from profits.

"Ours is a small company (about 60 employees), but we can compete with the big outfits if we run an efficient plant. That requires a number of things, including modern machinery. We'd like to buy $40,000 to $50,000 worth of capital goods each year. But we can't as long as the government continues its present unrealistic policies. I hope STEEL can exert some influence for a better depreciation system."—E. G. Hecker, president, Kortick Mfg. Co., San Francisco.

To Buy Equipment Now

"Depreciation policies and the profit squeeze make us unable to accumulate capital to buy new equipment. We would like to replace an old Wheelabrator Tumblast with a new one right now. It

"... greater importance than income tax cut."

"... not a hell of a lot left to buy equipment."

"... constructive step toward overcoming the recession."

Reform

would cost $20,000. But our depreciation reserve is so meager that we would have to take a considerable sum from profits.

"As a matter of fact, we'd like to replace each Tumblast with a new one every five years because: 1. Technological developments make the old machine relatively obsolete in five years. 2. Maintenance costs get progressively higher at that age.

"But we can't replace equipment that often because we have to amortize it over a ten-year period. Depreciation reform would mean much more to us than the tax relief that is being talked about in Washington. Revisions must be made if the nation's heavy machinery industry is to show substantial improvement in the next decade.

"Our foundry had a chance to taste fast amortization; we know what an aid it can be. That would certainly help us now."—T. H. Tanner, vice president, Zenith Foundry Co., West Allis, Wis.

For Long Term Growth

"I regret that it took a recession to stimulate American businessmen into concerted action on depreciation reform. Correction of the recession would merely be a byproduct of such reform. The primary objective would be economic growth and increased, more efficient production.

"Present depreciation policies work excessively to our disadvantage. That's especially true in our company since we can't use standard machine tools. Industrial brushes must be made on special machines which can become obsolete the day after they're built if competition makes a machine that does the job faster or better.

"Today's outmoded depreciation methods preclude small businesses from buying the equipment they need to stay competitive. Well managed companies are held to relatively small real profit dollars because half the stated profits go for income taxes. Of the other half, only 30 per cent can be accumulated for equipment replacement because of the 'unnecessary accumulation of profit' rule. (I realize that, under special circumstances, a firm can get permission to retain a higher percentage of profits. But how long will investors sink capital into a business that pays an inadequate dividend?) So a company can use only 15 per cent of a relatively small original profit to replace a machine that, due to inflation, might cost two or three times what it did ten years ago. (One of our machines that cost about $20,000 in 1943 now carries a $67,000 price tag—without attachments.)

"Fast tax writeoffs would go a long way toward solving the problem. But that wouldn't be the total answer. We need a system to permit compensation of inflated replacement cost. One answer would be to set up a replacement reserve on the books, to be deductible in the same way as depreciation. It would represent the difference between acquisition cost and replacement cost for each machine. Annually, the amount of inflation that occurred on each machine would be entered on the books. Under that system, when a machine is fully depreciated, the amount of depreciation, plus the replacement reserve, would equal the replacement cost. Reserves not used could be taxable as income.

"That's just one possibility. It's obvious that some type of tax reform is required. We commend STEEL for its campaign to attain that end and trust it will pay off in a realistic depreciation system."—James E. Bateman, president, Spiral Brushes Inc., Cleveland.

To Improve Productivity

"We are a small firm trying to grow. But we're held back by a big tax problem; we can't build up any reserve for expansion. For example, we bought a new press brake for $7500 that we'll have to depreciate over a 15-year period. If we could amortize it over five years, or even ten, it would help us considerably. We need depreciation reform; present laws have kept us from buying equipment we needed to improve productivity. Revision of the laws would encourage us to purchase new equipment."—Everett E. Wellman, treasurer, Trubilt Truck Body Co. Inc., Milford, Mass.

To Help Small Business

"Tax relief, as suggested, would help small business immensely. We are continually patching up and overhauling our machines because profits after taxes aren't large enough to permit the modernization we need. We have a large mill we'd like to replace now—and we would replace it if we could write it off in a short time—but under present conditions it will have to last for a while yet. I believe that depreciation reform would help us pull out of the recession; firms like ours would buy new equipment; the equipment people would buy more steel; and we'd be on our way."—W. M. Ross, secretary-treasurer, Arrow Mfg. Co., Denver.

Through Fast Tax Writeoffs

"We would like to have fast tax writeoffs as STEEL suggests. We certainly feel depreciation reform is necessary and are fighting for it. Our company has grown fast because we plow profits back into it. High taxes that drain off capital are the greatest drawback to our improvement and expansion. We would like to buy a $30,000 drill. But under present regulations, we may not be able to. We'd buy it if we could write off its cost in three, four, or five years."—H. B. Jensen, vice president, Western Steel Co., Salt Lake City, Utah.

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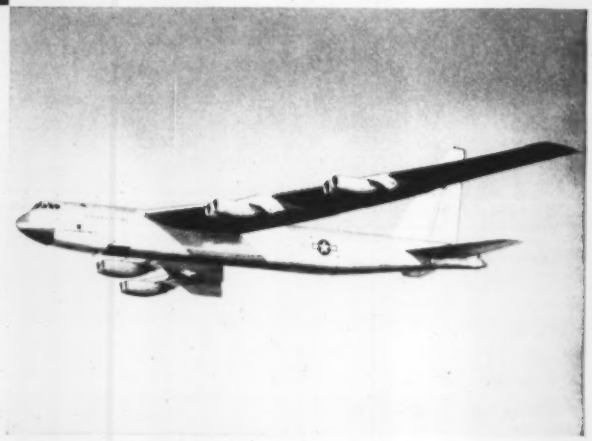

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Ford Motor Co.

T-Bird Sales Are Red Hot

Ford thinks its pint-sized bombshell is headed in the right styling direction way ahead of its competition. The big problem now is to get it into a lower price range

IN A YEAR when total car sales are off about 40 per cent, Ford's four-passenger Thunderbird is selling twice as well as the two-seater did last year. The demand for it is so brisk that the company is considering modifying it for '60 or '61 and phasing it into the regular line as competition to Chevrolet's Impala and a similar luxury model Plymouth will introduce.

"More than 4300 T-Birds were sold in May, and dealers have received over 28,000 orders for the car," reports J. O. Wright, company vice president and Ford Div. general manager. In 1957, Ford sold 15,173 two-seater 'Birds. This year, 15,000 have been built, and Ford's Wixom, Mich., plant has consistently scheduled six-day workweeks.

How Come?—Thunderbirds are expensive (midwest dealers price it between $4600 and $4800), and rear seat space is limited. But sporty styling, compactness, and enough room for four people are making medium and high price car owners part with their money eagerly.

Robert H. Maguire, chief stylist of the company's interior styling studio, was the Ford Div.'s chief stylist when the T-Bird was born. He puts it this way: "The Thunderbird fills the bill for the customer who wants some sports car characteristics; for the customer who wants a distinguished vehicle; and for the average man who wants a useful car that's also distinguished and sporty."

George Walker, Ford's styling vice president, admits the car is a pattern for future planning and indicates it may be the kind of vehicle that will develop a specialty body style to replace the hardtop.

It's Obvious—Evidence that the car is destined for more than the luxury circuit is in papers presented at the Society of Automotive Engineers' annual meeting at Atlantic City, N. J. Some labeled the presentation a sales pitch, but it's obvious the Thunderbird contains design features other companies have only on drawing boards or in prototype form.

With bucket seats in front, the car uses the driveshaft tunnel housing between them as an instrument console to house heater and power window controls, plus the radio speaker and ash tray.

Don Frey, executive engineer, Ford Div., points out that the convertible model, introduced this spring, is unique because it has no wells or boots for top storage. The trunk lid is hinged at the rear, and the soft top folds into the luggage compartment (which has a 20 cu-ft capacity).

Side Tanks—Another T-Bird item slated for future cars is a crossflow radiator with header tanks on each side and an expansion tank which replaces the upper header attached directly to the engine block. Mr. Frey explains that this arrangement reduces radiator height so the low hood line (37.6 in.) can be attained.

Although Ford started its four-seater design on a 108-in. wheelbase, it soon switched to a 113-in. job with more space and improved styling proportions. The car is 52.5 in. high—about as far down as cars are expected to go. Its unitized construction and general appearance are causing many buyers to dub it a miniature Lincoln.

Shop Talk—While the company

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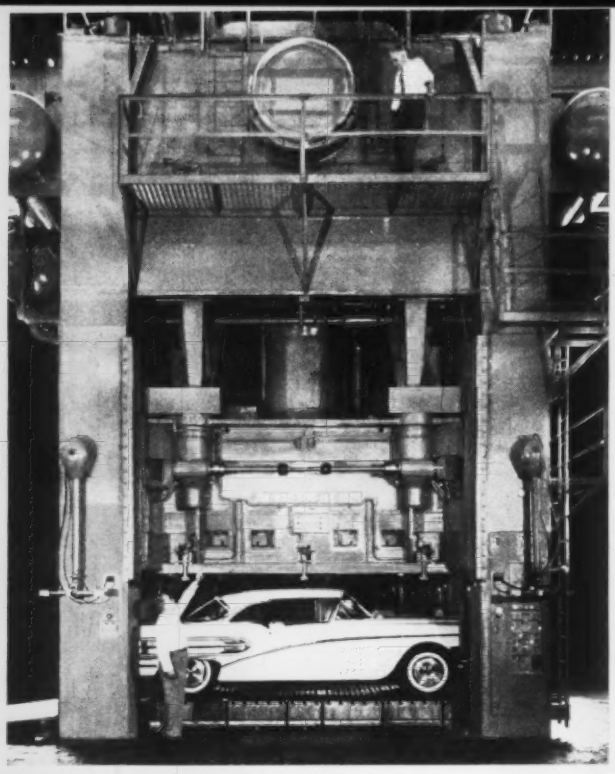


BANGING OUT A COMPLETE CAR in one stroke is only fantasy, but this giant press can cradle one in its 75-ton die bed. The largest press ever installed at Buick, it will form hoods. Weight: 700,000 lb. Height: 46 ft. It can exert 800 tons of pressure

can't comment on plans for the T-Bird, several executives have unofficially indicated Ford is so sure this is the way car designs are heading it wants to get the pint-sized demon into a price class where more people can buy it. Volume production would help reduce costs.

If Ford makes the move, the overall length will be increased slightly—perhaps to around 212 in. (It's 205.4 in. now.) This won't destroy compactness and will add a little more seating space. It also might make it possible to turn the T-Bird into a retractable hardtop, something several Ford designers have hinted at.

Mr. Maguire indicates the flat backlight appearance probably will be kept, but there'll be more glass in the greenhouse. Bucket seats and instrument consoles seem to be musts. Whether the car retains a unit body hinges on major company action. Some sources see a return to the conventional chassis and frame buildups for 1960 (See STEEL, May 19, p. 99).

Next Year—The Thunderbird will keep its present form for 1959, although the sheet metal and grille will be drastically changed, and there will be more chrome. Quarter panels will retain the Ford fin, but the horizontal taillights are gone. Instead, the division plans to install a huge round taillight near the bumper, with a smaller backup light directly above it.

The engine is expected to be the same 352 cu in. V-8 that's powering the T-Bird now. It has a four-barrel carburetor and develops 300 hp at 4600 rpm with a 10.2:1 compression ratio. Ford probably won't make its inexpensive, two-stage transmission available for the Thunderbird, although it's scheduled for introduction in the regular division lines.

Craft Unions Bow to NLRB

The National Labor Relations Board has ruled that the UAW will continue to represent skilled workers in auto plants, and the craft groups appear to be accepting the decision with good grace. It should simplify final bargaining.

There is one exception. The International Union of Operating Engineers (AFL-CIO affiliate), has filed a motion for reconsideration on the basis that there are other certified IUOE units in Ford Motor Co. Its original petition, requesting certification at Ford's Lorain, Ohio, plant, was dismsised on the ground the craft union is too limited in scope to be appropriate for collective bargaining purposes. Two other petitions involving General Motors Corp. were dismissed for similar reasons.

The petitioners, representing about 7000 skilled workers and five basic crafts, can't appeal the decision, but they could ask the federal district court for a decision on whether the NLRB exceeded its authority. Such a move is not anticipated.

Have Olds—Call Lucille

Ever yearn for the "good old days" when cars often needed a horse to help them on their way? American Air Products Corp., Ft. Lauderdale, Fla., has just the thing. The firm is producing 1901 Oldsmobiles from factory plans they've obtained from General Motors Corp.

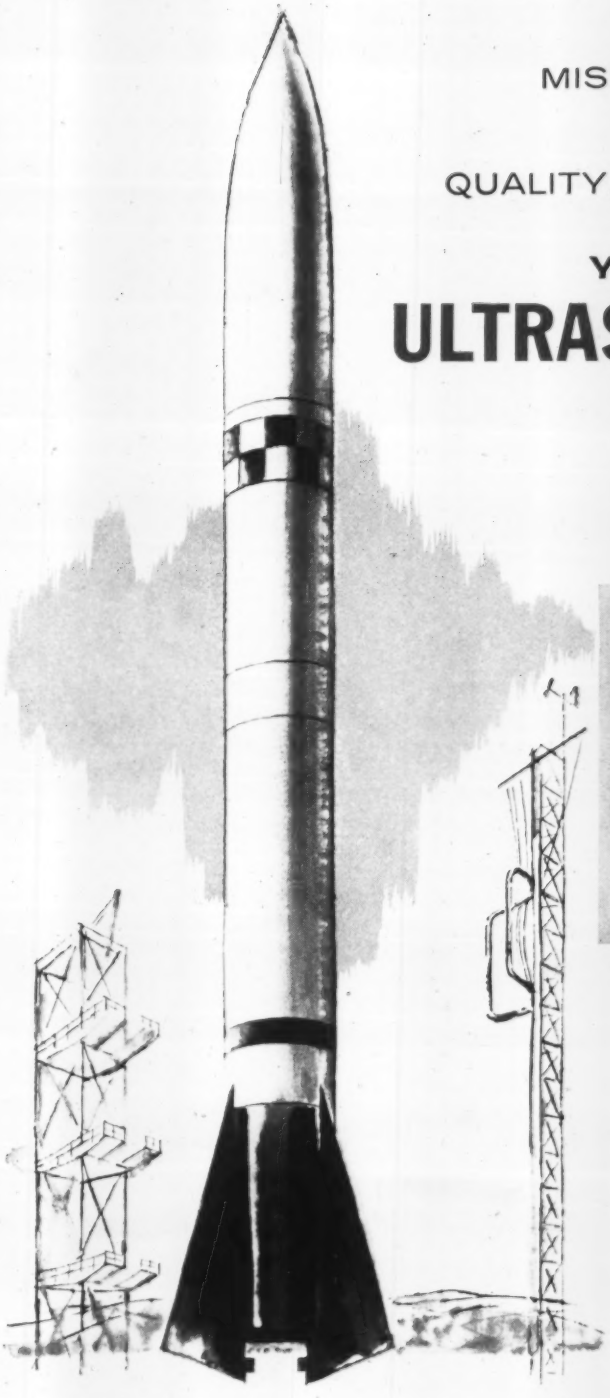
The cars sell for $1200, have a top speed of 35 mph, and get 60 mpg. Best of all, there's no chrome and no fins—just a steering tiller. AAP plans to build about 5000 in the next two years. It already has almost 1000 inquiries.

U. S. Auto Output

Passenger Only	1958	1957
January	489,357	642,090
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
5 Mo. Total	1,904,495	2,872,618
June		500,271
July		495,629
August		524,354
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,814

Week Ended	1958	1957
May 17	87,407	172,390
May 24	86,589	127,428
May 31	66,574	82,431
June 7	73,696	129,517
June 14	79,830†	125,372
June 21	80,000*	118,805

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.



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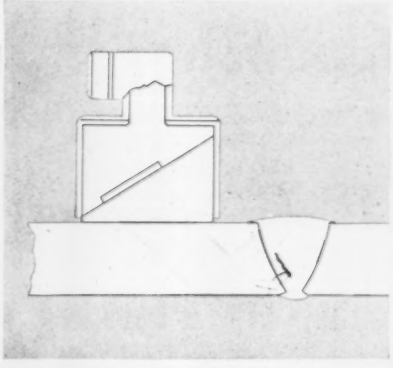

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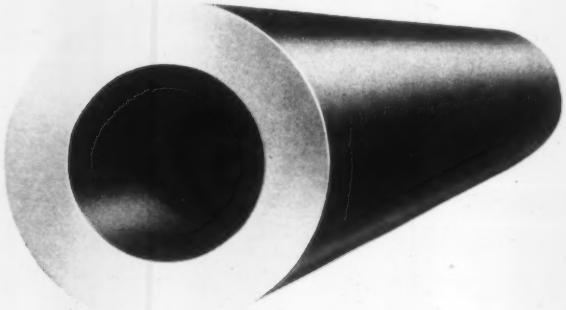
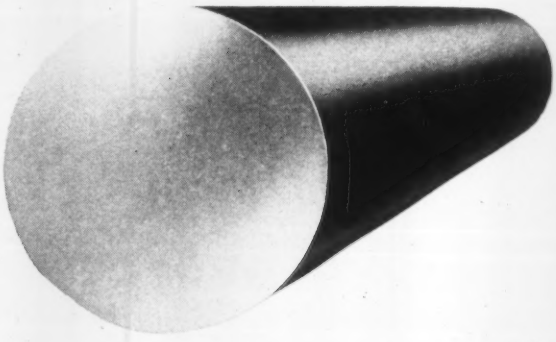


instead of a headache



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And you can actually get a better quality finished product with Timken seamless steel tubing. The reason is the way we make it. A solid round is forged over a mandrel, thoroughly working the metal inside and out. It's this rotary piercing operation that gives Timken seamless steel tubing its fine forged quality and uniform spiral grain flow for extra strength. Carefully controlled temperature and piercing speed keep this quality uniform from tube to tube, heat to heat, bar to bar.

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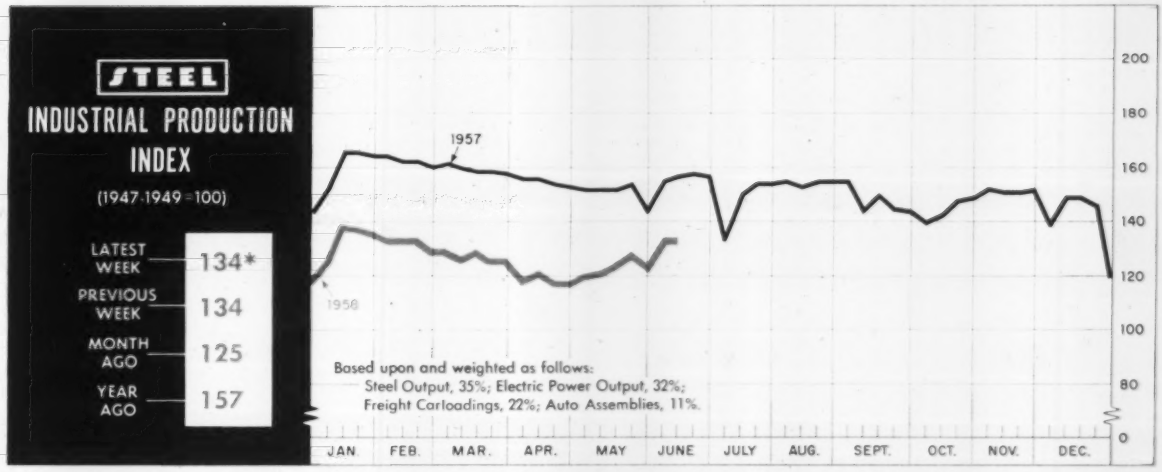

*Week ended June 14.

Index Climbs Halfway Up Recovery Ladder

STEEL's industrial production trend line is about halfway back up to prerecession levels. During the first two weeks in June (see chart above), it registered 134 (1947-49=100). That's 13.5 per cent above the recession's low point reached seven weeks ago. The recovery of 16 points represents 43 per cent of the decline from the 155 peak in August, 1957, to the 118 reading during the week ended Apr. 26.

It does not mean that the economy is halfway out of the slump, but it does indicate that the corner has been turned. In contrast with the last eight or ten months when minuses dominated the business chart, the immediate future will feature a mixture of plusses and minuses. The term "rolling adjustment" might become familiar again, this time characterizing a gentle lift rather than a gentle decline as it did a year ago.

What Next?—The strength of this spring upturn is greater than any for which STEEL has comparable records (dating back to 1953). Revised figures for the Memorial Day week reduced that holiday dip to only 4 points. The index's rebound the next week was even more impressive, exceeding the preholiday figure by 5 points. A further rise is expected through June.

There is some feeling among business analysts and economists that the bubble will burst after July 1. Those predictions are based mainly on a collapse of the buildup in steel production. The national operating rate for the week ended June 22 was scheduled at 64.5 per cent of capacity, good for about 1,730,000 tons of steel for ingots and castings. If the rate were to decline to its previous low level, the composite index would lose 10 to 11 points.

No Collapse—Despite the probability that some of today's steel buying is on a price basis, few steelmakers feel that the industry's

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,730[1]	1,728	2,181
Electric Power Distributed (million kw-hr)	11,500[1]	11,681	11,958
Bituminous Coal Output (1000 tons)	7,840[1]	7,140	10,020
Crude Oil Production (daily avg—1000 bbl)	6,250[1]	6,256	7,294
Construction Volume (*ENR*—millions)	$505.5	$481.4	$417.7
Auto, Truck Output, U. S., Canada (*Ward's*)	107,068[1]	97,877	156,223
TRADE			
Freight Carloadings (1000 cars)	600[1]	613	746
Business Failures (Dun & Bradstreet)	325	278	289
Currency in Circulation (millions)[3]	$31,052	$30,987	$30,903
Dept. Store Sales (changes from year ago)[3]	+1%	−1%	+1%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$23,133	$20,547	$20,766
Federal Gross Debt (billions)	$275.9	$275.7	$274.6
Bond Volume, NYSE (millions)	$27.8	$29.7	$21.3
Stocks Sales, NYSE (thousands of shares)	13,205	13,530	13,229
Loans and Investments (billions)[4]	$92.9	$92.1	$86.2
U. S. Govt. Obligations Held (billions)[4]	$31.3	$31.1	$25.8
PRICES			
STEEL's Finished Steel Price Index[5]	239.15	239.15	228.59
STEEL's Nonferrous Metal Price Index[6]	194.1	194.2	227.4
All Commodities[7]	118.9	119.1	117.5
Commodities Other than Farm & Foods[7]	125.1	125.2	125.3

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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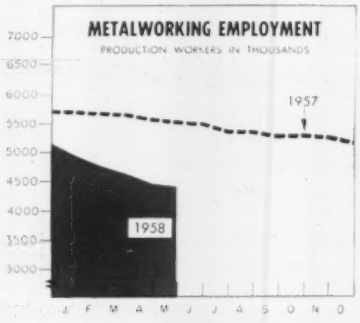
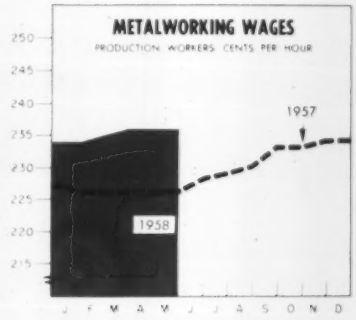




1957	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
May	1.093	883	1.255	847	1.435
June	1.093	887	1.239	855	1.415
July	1.075	869	1.207	848	1.373
Aug.	1.077	878	1.180	861	1.363
Sept.	1.061	878	1.186	879	1.278
Oct.	1.049	889	1.166	869	1.321
Nov.	1.029	887	1.141	852	1.350
Dec.	1.006	868	1.122	824	1.342
1958					
Jan.	957	833	1.097	792	1.276
Feb.	911	800	1.072	765	1.214
Mar.	884	781	1.053	747	1.157
Apr.*	848	761	1.027	729	1.105
May*	842	751	1.006	720	1.094

*Preliminary.
U. S. Bureau of Labor Statistics
Charts copyright, 1958, STEEL.

1957	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
May	246	216	228	205	237
June	248	217	230	207	240
July	252	218	230	205	241
Aug.	253	219	230	205	242
Sept.	256	222	232	207	246
Oct.	255	222	233	208	247
Nov.	255	223	234	210	250
Dec.	255	221	234	211	248
1958					
Jan.	256	222	234	212	246
Feb.	256	222	235	214	246
Mar.	257	223	236	214	248
Apr.*	257	224	236	214	247
May*	258	224	236	214	248

*Preliminary.
U. S. Bureau of Labor Statistics.

market will shrink that much. Some mills are booked halfway through July right now. At least one—Jones & Laughlin Steel Corp.'s Otis Works in Cleveland—is scheduled to reopen after July 1, following a lengthy shutdown. Total output probably will be cut a little, but that is normal during summer months.

A better case for the continuance of the recession could be built on the long model changeover period planned by the auto industry. That segment of the index accounts for about 10 points now. While there have been many rumors of a shutdown, official announcements are few, indicating that the closing may be gradual. It is doubtful that the industry will be 100 per cent inactive at any time, which means that it will contribute at least a little to over-all activity throughout the summer.

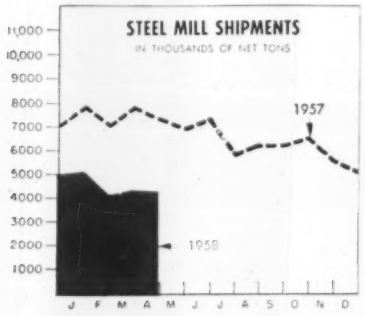
Indirect Effects—Both freight carloadings and electricity output will reflect the extent of the summer dropoff in the other two segments. Carloadings in the week ended June 7 reached the high point for the year at 612,715 cars. Chances are they will rise through June on the strength of increased shipments of iron ore, miscellaneous goods, and farm products. Even if steel production declines, ore shipments will remain fairly steady because of the lag between mining and consumption. Miscellaneous freight will decline moderately, reflecting the vacation season in manufacturing plants, but the seasonal rise in the movement of farm products should minimize or cancel out this loss.

Electrical energy production is gaining seasonally. Reduced industrial consumption will keep this indicator below the year-ago levels as it has throughout 1958. But when factory use of electricity is at its lowest, residential consumption for air conditioning will be at a peak. Result: This segment of the index will remain fairly steady this summer.

Recession or Seasonal?—It is unlikely that the industrial production index will decline enough to hit the "more recession" mark. Because the general economy is at a fairly low level to start with, chances are good the percentage decline this summer will be even less than it has been in most recent years.

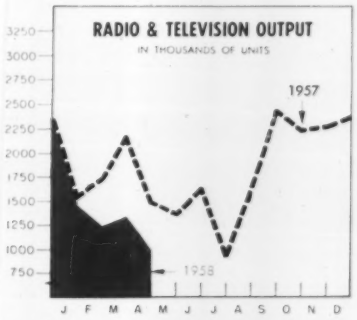
Consumer Still Active

In 1958 as in 1954, the consumer may be hailed as the hero of the



	Net Tons 1958	1957	1956
Jan.	5,215,819	7,809,451	7,587,870
Feb.	4,262,935	7,066,732	7,468,393
Mar.	4,448,526	7,821,616	8,255,824
Apr.	4,372,971	7,349,752	7,783,873
May	.....	6,972,091	7,764,776
June	.....	7,284,616	8,077,805
July	.....	5,877,133	1,288,988
Aug.	.....	6,229,853	5,539,915
Sept.	.....	6,171,674	7,058,028
Oct.	.....	6,550,690	7,930,957
Nov.	.....	5,606,018	7,431,136
Dec.	.....	5,092,913	7,064,093

American Iron & Steel Institute.



	Radio 1958	1957	Television 1958	1957
Jan.	1,027	1,086	434	450
Feb.	878	1,265	370	465
Mar.	931	1,609	417	560
Apr.	697	1,116	303	361
May	.....	1,024	...	342
June	.....	1,088	...	544
July	.....	613	...	360
Aug.	.....	966	...	674
Sept.	.....	1,611	...	833
Oct.	.....	1,569	...	662
Nov.	.....	1,689	...	575
Dec.	.....	1,793	...	574
Totals	.....	15,429	...	6,400

Electronic Industries Association.

recession. He has continued to buy goods at a rate only slightly below the all-time high levels of 1956 and 1957. Department store sales for the four-week period ended June 7 were equal to those of the year-ago period. For the year through June 2, sales were only 2 per cent behind those of the corresponding period last year.

Carl Lantz, vice president-sales for Admiral Corp., Chicago, feels that the current business upturn is having its effect at the consumer level. "Because of the low inventories carried by most dealers this year, we are able to gage retail sales almost immediately. It is apparent that the consumer is ready to buy."

Personal Income Increases

There is no question about the consumers' ability to buy. Personal income in May increased for the second consecutive month, reaching the highest point since last November. At an annual rate of $344.3 billion, the figure was $1.1 billion above the year-ago level. The Department of Commerce says that salary and wage payments accounted for $700 million of the May rise on an annual basis. The big factor was an increase in construction payrolls.

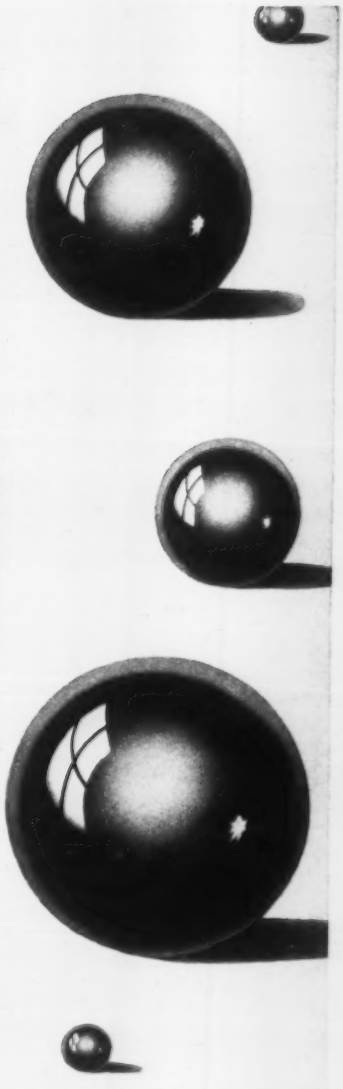
Construction Pace Hot

Construction is following its 1954 role in bringing the country out of the recession. Heavy construction awards during the week ended June 12 continued the hot pace of recent months, totaling $505.5 million, announces *Engineering News-Record*. Cumulative awards so far about equal year-ago figures.

Housing construction is sparking the construction outlook. May marked the first time since January that starts topped the 1-million annual mark. A record number of applications for FHA mortgages last month indicate the trend will continue. Applications rose above 90,000, breaking the previous high of 89,764 set in May, 1950.

MHI Order Index Rises

Producers of material handling equipment may mark April as their turning point in the recession. New orders came to 122.36 per cent of the 1954 base, the first time this year they have exceeded 100 on the index, says the Material Handling Institute Inc.



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OR22

ALEXIS N. DAHL
Black & Decker p. a.

STEVENSON M. TAYLOR
Harris Calorific exec. v. p.

J. R. MUNRO
Caterpillar Tractor v. p.

WALTER S. JAKUBOWSKI
Superior Tool & Die post

Alexis N. Dahl was appointed purchasing manager, **Black & Decker Mfg. Co.**, Towson, Md. He succeeds **Glenn C. Wilhide Jr.**, appointed general manager of Black & Decker Mfg. Co. Ltd., Brockville, Ont., a subsidiary.

Stevenson M. Taylor was elected executive vice president, **Harris Calorific Co.**, Cleveland. He was in charge of staff operations. Before joining Harris in 1956, he was manager of production and material control at Euclid Div., General Motors Corp. **Leigh H. Perkins** was made vice president-sales, and is succeeded by **Roy L. Rasmussen** as sales manager. **Richard M. Peck**, former plant superintendent, was named works manager.

Harold H. Gillespie was made general manager, **Split Ballbearing Div.**, Miniature Precision Bearings Inc., Lebanon, N. H. **Frank Stearns**, acting manager since retirement of **Raymond F. Gardner**, resumes former duties of assistant general manager and chief engineer. Mr. Gillespie was vice president-assistant general manager of Barden Corp.

Blaz A. Lucas Jr. was appointed sales manager, **Ingersoll Products Div.**, Borg-Warner Corp., Chicago. He was factory manager.

William H. Schmidt was named plant superintendent at Port Chester, N. Y., for **Russell, Burdsall & Ward Bolt & Nut Co.** He is replaced as plant superintendent at Los Angeles by **Olof V. Johnson**, formerly machine shop supervisor.

Caterpillar Tractor Co., Peoria, Ill., promoted **J. R. Munro**, director of manufacturing-foreign operations, to vice president-manufacturing division. His responsibilities include functions of the manufacturing general office, purchasing general office, and traffic general office. **W. K. Cox**, manager of sales promotion, was made vice president for domestic sales and sales promotion. He succeeds **Gail E. Spain**, promoted to president of the foreign trade group. **L. L. Morgan** succeeds Mr. Cox.

Robertshaw-Fulton Controls Co. appointed Vice President **Woodford D. Miller** general manager of its Fulton Sylphon Div., Knoxville, Tenn. He was formerly at company headquarters in Richmond, Va. Mr. Miller replaces Vice President **Freeman G. Cross**, who continues at the division in charge of expanded marketing and product development.

Jack K. Sutter was appointed manager of tubular sales for **National Supply Co.**, Pittsburgh. He succeeds **Charles J. Ramsburg Jr.** Mr. Sutter was sales manager, standard pipe products.

Howard A. Patrick was promoted to works manager, **Magnetic Metals Co.**, Camden, N. J. He has been associated with the firm since it was formed in 1942.

Henry D. Bryk joined **Rex Precision Products Inc.**, Culver City, Calif., as manager of engineering and quality control. He was manager of operations, Alloy Precision Castings Corp., Cleveland.

Superior Tool & Die Co., Detroit, elected **Walter S. Jakubowski** executive vice president and general manager. He succeeds **Martin L. Jacobs**, who is now serving as company consultant. Mr. Jakubowski was vice president and general manager, Richard Bros. Div., Allied Products Corp.

Howard L. Wright was made manager of special products sales at **Hanson-Van Winkle-Munning Co.**, Matawan, N. J. The new section will seek to develop new markets, especially for electrical and mechanical products. Mr. Wright was district manager for the company in the Middle Atlantic States.

William C. Lytle was elected a vice president of **Atlas Powder Co.**, Wilmington, Del. He was assistant to the senior vice president.

Albert C. Fisher was elected vice president-sales and engineering, **Pittsburgh Engineering & Machine Div.**, Pittsburgh Steel Foundry Corp., Glassport, Pa. For the last 30 years, he has been with Blaw-Knox Co., recently as assistant vice president-engineering and sales in its foundry mill machinery division.

Olin Mathieson Chemical Corp., New York, consolidated operating units into seven industrial divisions. Four new divisions and the vice presidents appointed to head them are: Chemicals, **Edward Block**; metals, **Jess E. Williams**; packaging, **Robert H. Evans**; energy, **Carroll Copps.**

James O. Peale was made manager

HENRY M. HEYN

ROBIN A. BELL

executive positions at Surface Combustion

E. D. VANCIL

L. E. EBERTS

Cincinnati Milling management positions

of distributor sales, **Carpenter Steel Co.**, Reading, Pa.

Henry M. Heyn was elected president; **Robin A. Bell**, executive vice president of **Surface Combustion Corp.**, Toledo, Ohio. **James P. Farrell** was elected vice chairman. Mr. Heyn was also elected president of Surface Industrial Div., Toledo; Mr. Bell, president of Janitrol Div., Columbus, Ohio, each moving up from vice president-general manager of his division.

Hyster Co., Portland, Oreg., elected as vice presidents **Ray M. Ronald** and **Frank A. Rostedt.** Mr. Ronald is in charge of the tractor equipment division; Mr. Rostedt is managing director of the Hyster plant in Nijmegen, the Netherlands. He is also assistant secretary and treasurer of the company.

H. G. Neyenesch was made manager of **Bethlehem Steel Co.**'s fabricating works at Pottstown, Pa., to succeed **H. Lewis Williams**, retired. **C. B. Welch** was made assistant manager of works.

D. S. Templeton, H. W. Henkels, and **E. H. Borneman** were named to new posts in **Westinghouse Electric Corp.**'s semiconductor department at Youngwood, Pa. Mr. Templeton is manager, product engineering section; Dr. Henkels, manager-advanced development engineering section; Dr. Borneman, manager-process and design engineering section.

James M. Crawford joined **Disston Div.**, Philadelphia, H. K. Porter Company Inc., as assistant general sales manager. He was sales manager, Lectrolite Corp.

E. D. Vancil was elected vice president, **Cincinnati Milling Machine Co.**, Cincinnati. He is manager of the Meta-Dynamics Div. **L. E. Eberts** was elected vice president of the sales subsidiary, Cincinnati Milling & Grinding Machines Inc., of which he is assistant export manager.

M. S. Feltz was made marketing manager, **Acro Div.**, Robertshaw-Fulton Controls Co., Columbus, Ohio. He was Chicago regional sales manager.

Crucible Steel Co. of America, Pittsburgh, appointed **William R. Howell** assistant to vice president-operations. He is succeeded as Midland, Pa., works manager by **George M. Burrier. Donald S. Foote** was made works manager-titanium division at Midland. **Howard T. Clark Jr.** was made manager-Midland research laboratory, a part of the company's newly created technology department. **Dr. M. J. Day** was named to head the new technology department as vice president-technology. He was vice president-research and development. **D. I. Dilworth Jr.**, director of metallurgy, assumes broadened responsibilities in the new department; **W. E. Gregg** was named director of technical development; **Dr. W. L. Finlay**, director of research.

H. E. Lore was made manager, engineering and construction department, machinery division, **Dravo Corp.**, Pittsburgh. He was operations manager of the department.

Dr. A. E. Edwards was made director of research for **Aluminium Laboratories Ltd.**, Montreal, Que. He succeeds **R. H. Rimmer**, retiring July 1.

Clark Bros. Co., Olean, N. Y., unit of Dresser Industries, named **Robert J. Spears** to the new post of assistant general sales manager. He will supervise eastern district offices. **Richard E. Jenkins** was named to a similar post, supervis-

WILLIAM R. HOWELL

DONALD S. FOOTE

DR. M. J. DAY

promotions at Crucible Steel Co. of America

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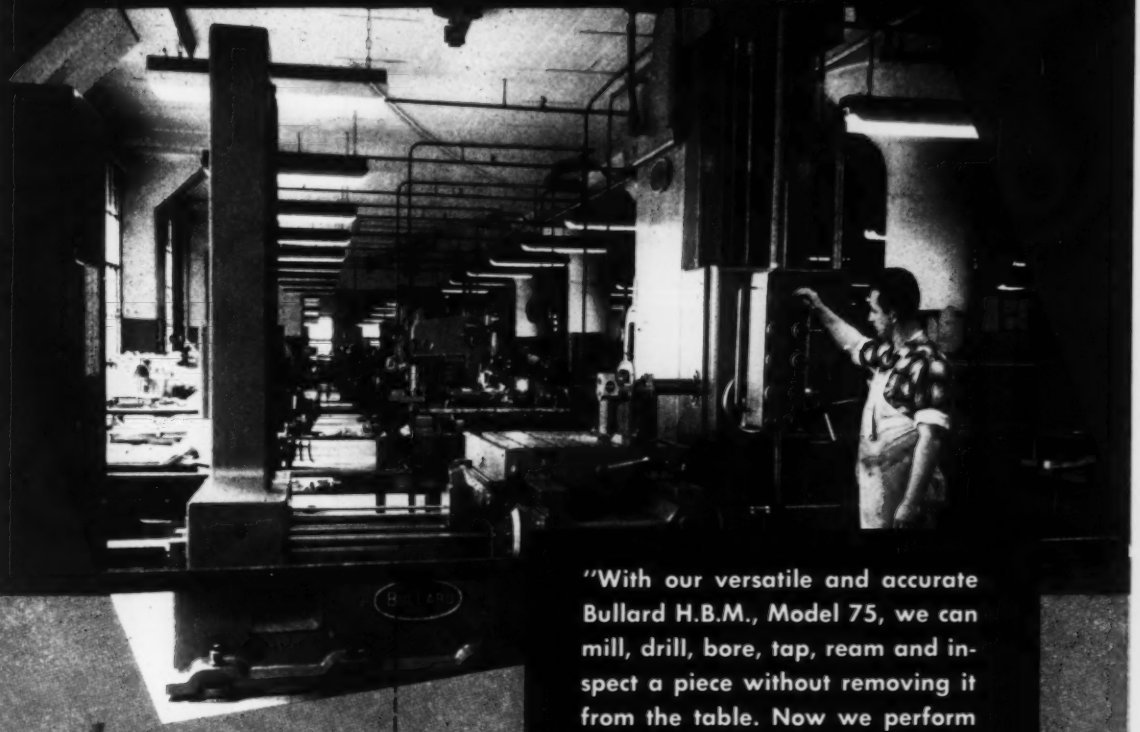

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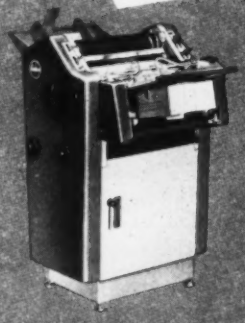

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Campbell Chain v. p.-mfg.

JAMES PETERSON
chief eng., Cyril Bath

FRANK J. DURZO
Jeffrey Mfg. v. p.-mfg.

ing district and branch offices in areas west of the Mississippi River.

Howard D. Campbell, formerly treasurer, was elected vice president-manufacturing, **Campbell Chain Co.**, York, Pa. **Gustave A. Blum**, former plant superintendent, was appointed second vice president-manufacturing.

James Peterson joined **Cyril Bath Co.**, Solon, Ohio, as chief engineer. He was supervisor of special machine design and manufacturing of test equipment at Chance Vought Aircraft Inc.

William C. Decker succeeds **Frederick C. Thompson** as chairman of **Corhart Refractories Co. Inc.**, Louisville. He is president of Corning Glass Works, parent company.

Fred J. Blum was elected executive vice president and secretary, **Midwest Piping Co.**, St. Louis.

Alvin H. Barrows was made Indianapolis sales manager, **United States Steel Corp.**, to succeed the late **J. Gardner Brooks.**

Frank J. Durzo was named vice president - manufacturing, **Jeffrey Mfg. Co.**, Columbus, Ohio. He was works manager.

Clinton M. Starks was named executive vice president and general manager, **City Tool Corp.** and **Atlas Tool Designers Inc.**, Dayton, Ohio. He was with Frigidaire Div., General Motors Corp.

Thomas L. Hammond succeeds his brother, the late **Stevens H. Hammond**, as chairman of **Whiting Corp.**, Harvey, Ill. He was vice president in charge of Trackmobile and General Products Div.

John A. Wagg was made product sales manager for **Aluminum Safety Products Inc.**, New York.

Stanley L. Nitkiewicz was appointed chief engineer of **Abbey-Etna Machine Co.**, Perrysburg, Ohio.

Nicholas J. Stock was made assistant manager-purchases, **Cadillac Motor Car Div.**, General Motors Corp., Detroit. He replaces **Herbert F. Siewert**, retired.

George A. Lagassa was named vice president-manufacturing, **Titeflex Inc.**, Springfield, Mass. He was general manager, Elbeeco Div., Aeroquip Corp.

Robert J. Sahr was appointed president of **Thermal Transfer Corp.**, Pittsburgh. He succeeds the late **Walter H. Scheib.** Mr. Sahr was vice president of sales.

DuRay E. Stromback was named general manager-manufacturing and engineering at Plymouth, Mich., for **Burroughs Div.**, Burroughs Corp. Former manager of engineering at Plymouth, he succeeds **R. A. Niemi.**

E. L. Hiter was named general manager of **Flexonics Corp.'s** new expansion joint division, Maywood, Ill. He is responsible for production and sales.

Youngstown Sheet & Tube Co. named **William C. Campbell** superintendent of merchant mills, Youngstown district. He succeeds **Clark S. Lambert,** retired.

Clarence F. Van Epps was made director of manufacturing, electronics division, **Stromberg-Carlson**, division of General Dynamics Corp., Rochester, N. Y. He is succeeded as manager of materials engineering by **Ernest W. Goral.**

Howard W. Bennett was made assistant superintendent-steel production for the Houston mill of **Sheffield Steel Corp.**

Continental Can Co., New York, in reorganizing its purchasing department, named **Harold R. Coleman** to the new post of manager of plant purchasing service. The post of regional purchasing agent-central and eastern regions, was discontinued, and **R. H. Ireland** was made assistant to the general purchasing manager, in charge of special projects. Made purchasing managers are **J. J. Schneewind**, in charge of metals; **W. L. Dykema**, capital; **J. J. Sherlock**, production materials; **A. C. Escobar**, Pacific Region.

OBITUARIES...

Vincent Delport, 70, treasurer of **Penton Publishing Co. Ltd.**, London, England, and European editor of STEEL, died June 3.

Stainless Steel Service

the Ingersoll way

Service is a word that gets kicked around a lot—often tossed off lightly and loosely. But here at Ingersoll Steel, *service* is a word we live by.

It means, for example, tailoring our production schedules to *your* requirements. It means producing to your exact analysis, size and thickness specifications. It means quality control to assure uniformly high quality from one order to the next, so you can depend on the fabricating characteristics you expect. It means deliveries timed to your production needs. It means providing technical information whenever required.

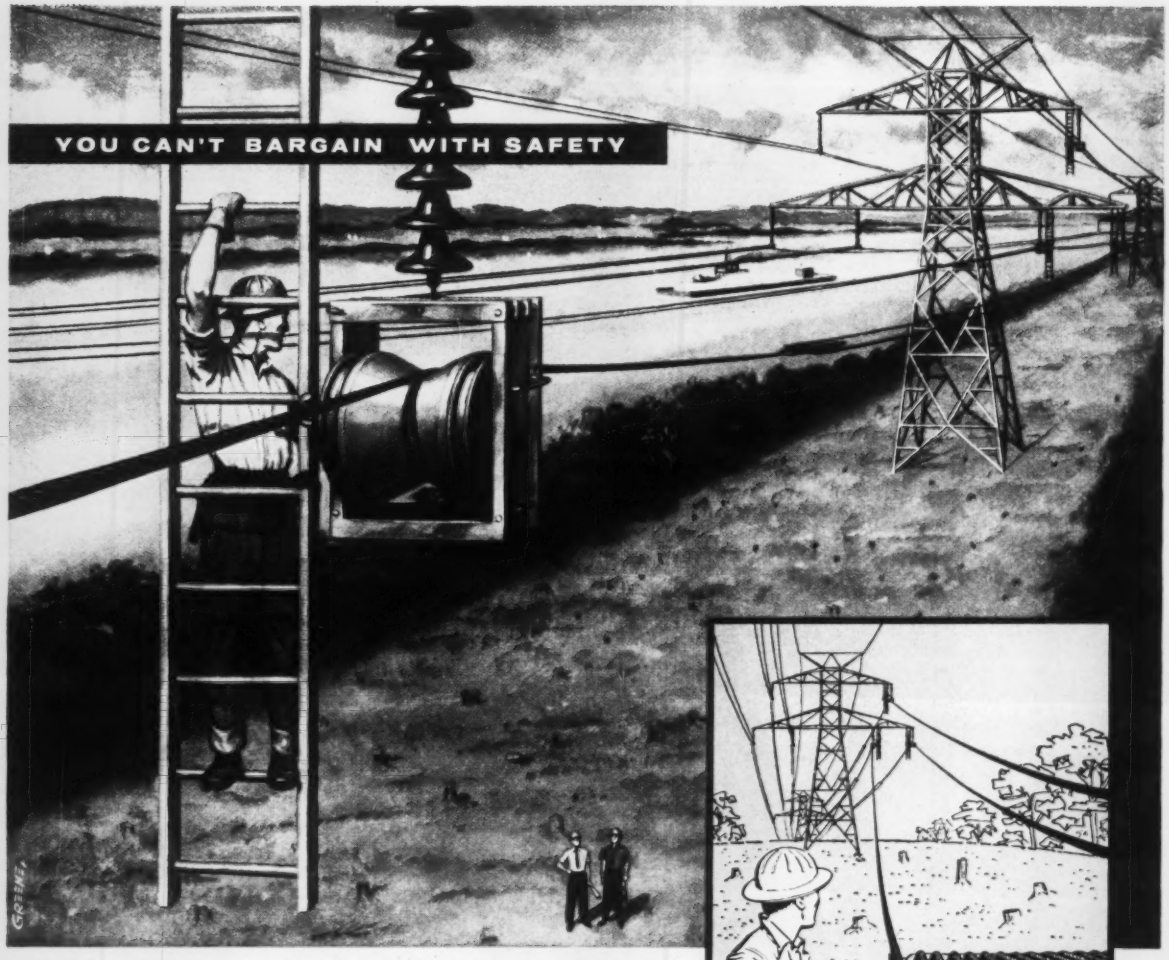
So next time you need stainless sheets or plates —solid, heat-resisting, or clad—call Ingersoll Steel and get a new slant on *service*.

Our telephone number is New Castle (Indiana) 132

Ingersoll STEEL DIVISION

Borg-Warner Corporation

New Castle, Indiana



Stringing conductors on towers carrying a live 330,000 volt circuit is a tough job. Hoosier Engineering Company of Columbus, Ohio, does it by threading conductors up to 1¾" through a tension machine and pulling them over sheaves on the tower arms with 9000 foot lengths of Wickwire Wire Rope. On jobs like this, where men's lives are at stake . . .

rope failure can be fatal

Whether you're stringing power lines, pulling drill pipe, or handling other hazardous hoisting jobs—don't bargain with safety. "Bargain" wire rope can cause more trouble and expense than you expect. Buy wire rope on the basis of *quality* . . . buy Wickwire Rope.

For extra strength—buy Wickwire's Double Gray IWRC extra improved plow steel wire rope

WICKWIRE ROPE — A CF&I PRODUCT

CF&I

LOOK FOR THE YELLOW TRIANGLE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso Farmington (N. M.) • Fort Worth • Houston • Kansas City • Lincoln • Odessa (Tex.) • Oklahoma City • Phoenix • Pueblo Salt Lake City • Tulsa • Wichita

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WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New Orleans New York • Philadelphia

5924

U. S. Steel Modernizes Plants

New sintering plant at Youngstown increases efficiency of blast furnaces and boosts their ironmaking capacity. Six wire annealing furnaces replace older units at Cleveland

UNITED STATES Steel Corp., Pittsburgh, is continuing its program to improve plant facilities aimed at conserving raw materials, meeting increasingly exact requirements of customers, and maintaining its competitive position.

Sintering Plant—A new ore sintering plant dedicated at the Youngstown (Ohio) District Works is capable of processing 5000 tons of ore daily for the works's blast furnaces (five of the six are active).

Designed and built by the Dwight-Lloyd Div., McDowell Co. Inc., Cleveland, it has: A continuous traveling sintering grate 185 ft long and 8 ft wide; a special gas-fired furnace to ignite the fuel contained in the mixture of iron ore, flue dust, and coke breeze; a series of wind boxes to accelerate the fusing of iron particles; and fans with a capacity of 400,000 cfm.

Other equipment includes 8265 ft of conveyors (3765 ft, sinter plant; 4500 ft, screening plant and ore yard system) and 100,000 cu ft of storage bins.

Annealing Furnaces—The corporation's American Steel & Wire Div. has installed six large radiant tube, high convection wire annealing furnaces at its Cuyahoga Works in Cleveland. The circular furnaces are 114 in. in charge diameter and produce up to 5 million Btu per furnace per hour. Each has a capacity of 24,000 lb of product. Coils of rod or wire can be stacked to a height of 9 ft on four vertical spindles.

Operating under the most precise atmospheric conditions, the furnaces anneal wire at temperatures up to 1400° F over a 24 to 36 hour cycle.

The furnaces, as well as the loading and stripping machine, were manufactured and installed by Lee Wilson Engineering Co., Cleveland. The furnaces replace six older furnaces at the plant.

United Expands Facilities

United Engineering & Foundry Co., Pittsburgh, will enlarge its casting and steel roll finishing buildings at Vandergrift, Pa. Estimated cost: $1,750,000. New equipment will include a roll casting pit, roll mold drying oven, two large roll heat treating furnaces, and a 75-ton capacity overhead traveling crane. The expansion program provides for additional capacity as well as facilities for the making steel rolls and machinery larger than those presently needed by customers.

THE MACKINAC BRIDGE, world's longest suspension type, will be dedicated Saturday (June 28). The 26,444-ft (over-all) project links Mackinaw City to St. Ignace. Estimated to weigh 67,300 tons, it cost $96.4 million. Its erection began July 2, 1955; it was opened to traffic Nov. 1, 1957. American Bridge Div., U. S. Steel Corp., built the superstructure; Merritt-Chapman & Scott Corp. was the substructure contractor

Enlarges Ordnance Plant

Food Machinery & Chemical Corp,. San Jose, Calif., will spend $500,000 on expansion of its Ordnance Div. plant.

Shift in Powdered Metals

American Powdered Metals Inc., North Haven, Conn., purchased the business and certain production facilities of Yale & Towne Mfg. Co.'s powdered metal products plant at Franklin Park, Ill. Henry S. Shroka, western manager, is in charge of the new facilities. The transaction does not include Yale & Towne's Addison, Ill., facilities for making ferrite and other magnetic components for the electronic industry. Previously, the Addison and Franklin Park plants constituted the Powdered Metal Products Div. of Yale & Towne.

Glidden Opens Laboratory

Glidden Co., Cleveland, has established an Automotive & Industrial Sales & Service Laboratory at 7508 Woodward Ave., Detroit, Mich. G. Sheldon Veil is manager.

Broadens Alloy Service

Wilbur B. Driver Co.., Newark, N. J., has installed new facilities to produce custom alloys. Production equipment includes one of the nation's largest vacuum melting installations. The new integrated, custom alloy service provides complete development and manufacturing departments for the industry.

Plans Research Center

Leeds & Northrup Co., Philadelphia, is constructing a scientific research center at North Wales, Pa. The $1.7-million project is sched-

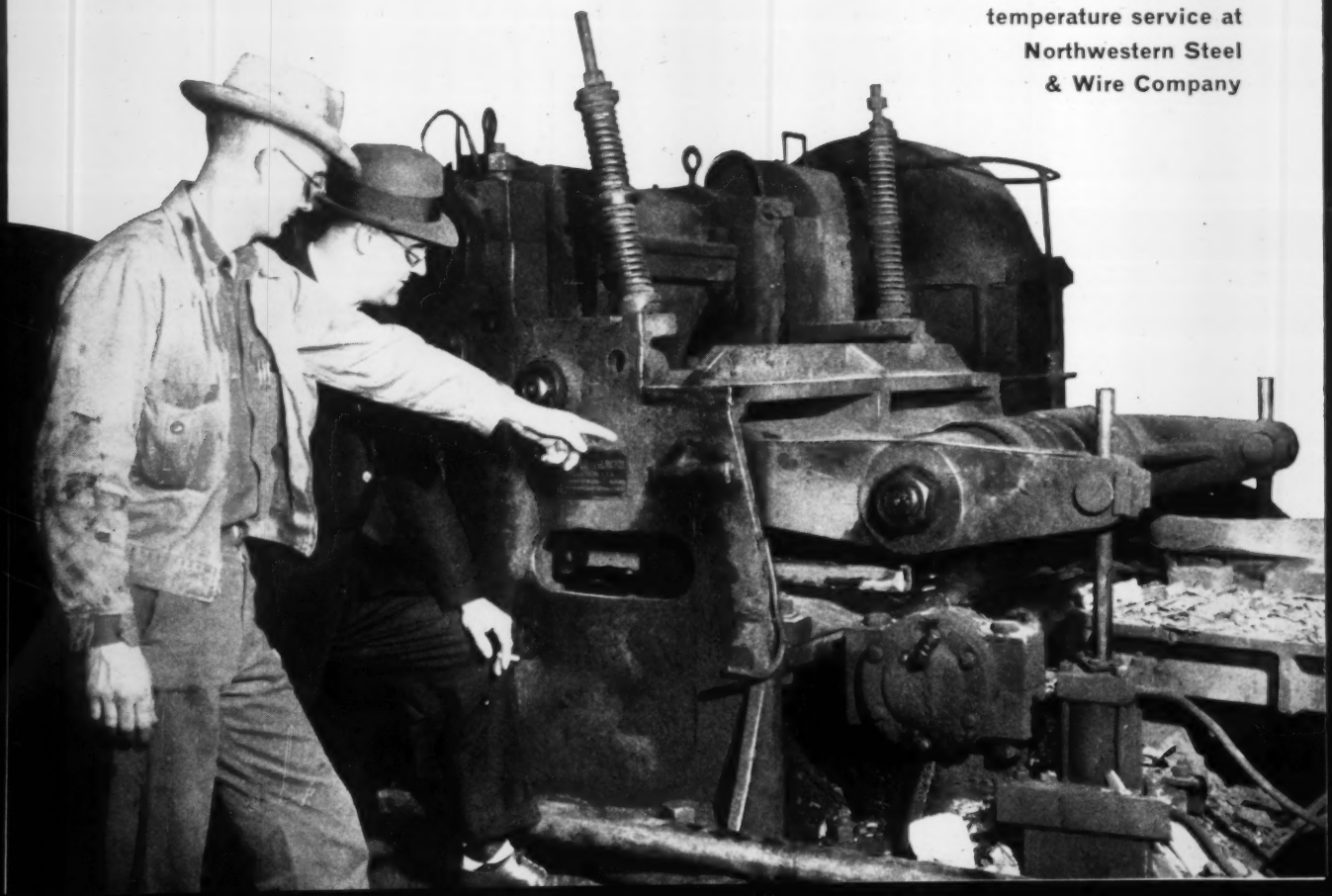
(*Please turn to Page* 78)

Shutdowns
for lubrication
cut in half
with

RYKON

Grease

Dollars in production time saved by using RYKON in high temperature service at Northwestern Steel & Wire Company



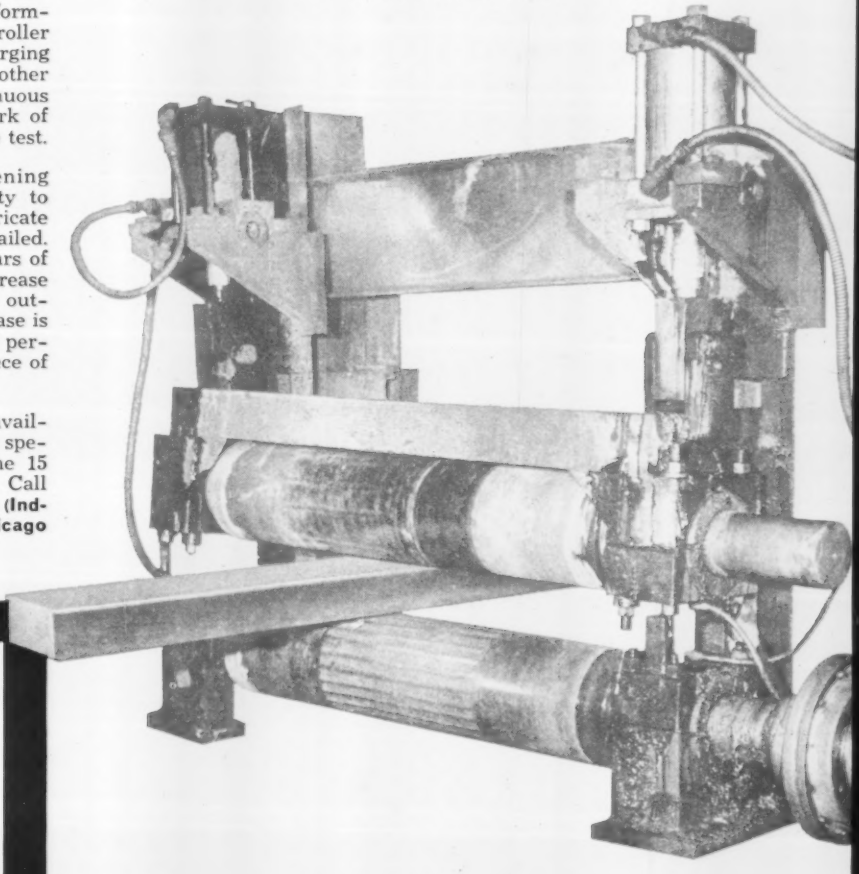
Bearings on the 46-inch blooming mill manipulator and side guard carrier had to be lubricated twice each eight-hour shift before RYKON Grease was used. The mill had to be shut down while the lubrication work was performed. Now with RYKON, the bearings are greased once each shift. Maintenance men find rollers and pins are still well lubricated. The rollers are subject to almost constant heat and water washing. Steel blooms heated to approximately 2300° F. are just 18 inches away from the RYKON lubricated bearings. The lubricating properties of the grease are unaffected by the heat.

RYKON Grease delivers similar performance results elsewhere in the plant. In roller bearings on the reheating furnace charging tables, in pinch roll bearings and in other trouble spots, where heat and continuous water washing would make short work of other greases, RYKON stands up to the test.

A unique nonsoap, organic thickening agent gives RYKON Grease the ability to provide lubrication in tough-to-lubricate spots long after other greases have failed. This thickener is the result of five years of research effort by a Standard Oil grease research team working to develop an outstanding industrial grease. RYKON Grease is a true multipurpose grease capable of performing all lubrication jobs on one piece of equipment or often in an entire plant.

More facts about RYKON Grease are available from the Standard Oil lubrication specialist that is near you in any of the 15 Midwest and Rocky Mountain states. Call him. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

Bloom in the pinch roll. A 2300° F. bloom goes through while water washes continuously. RYKON Grease keeps this equipment lubricated at all times in spite of heat.

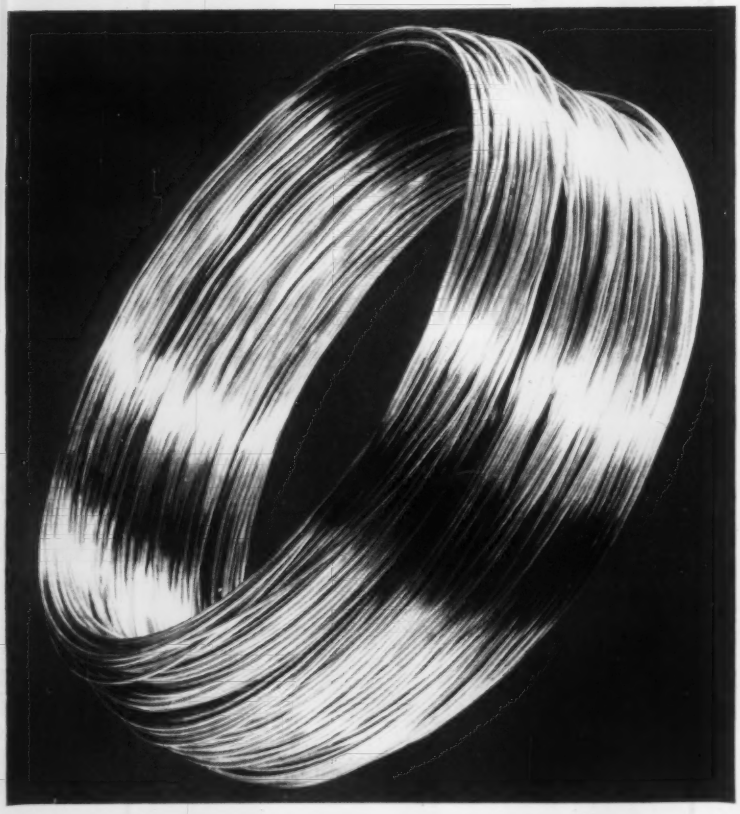


Quick facts about
RYKON Grease

- Stable at high temperatures. At sustained high temperatures RYKON Grease remains soft and grease-like.
- Resistant to water washing.
- Mechanically stable. Minimum change in consistency in service.
- Resistant to oxidation. Thickener acts as an inhibitor.
- Exceptional rust preventive properties.

You expect more from STANDARD and get it!

Lubrication time cut. Mill feeder pinch roll bearings formerly lubricated twice each eight hours. Now with RYKON Grease lubrication is needed only once each shift. Elbert Dean, Northwestern Steel lubrication engineer, and Standard Oil lubrication specialist, Charles Daub, inspect bearings. Counseling people who have lubrication jobs like this is work for which Chuck Daub is well-qualified. Chuck has 12 years' experience in lubrication technical service work. He has an engineering degree from Illinois Institute of Technology and has completed the fifteen week Standard Oil Sales Engineering School course.



from CONTINENTAL
a lustrous new

TINNED WIRE

Here's smoothness and luster you rarely get in tinned wire. Continental's special technique makes possible an enduring, uniformly bright finish . . . a wire so bright that it can replace plated wire on many products. It retains its brightness for long periods of time in normal use. Continental tinned wire meets your needs for quality and workability and is available in almost any temper and analysis in medium low carbon and low carbon steels.

FINE—16 gauge through 30 gauge, in 8" diameter coils
COARSE—20 gauge through 5/16", in 16" and 22" diameter coils.

For smooth beauty and high degree of perfection in wire, you will want to investigate Continental Tinned Wire. Write or Telephone—today; or return coupon below.

FILL OUT AND RETURN COUPON TODAY

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____
☐ Send Complete Details ☐ Have Salesman Call

CONTINENTAL STEEL
CORPORATION • KOKOMO, INDIANA

PRODUCERS OF: Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame Sealed, Coppered, Tinned, Annealed, Liquor-Finished, Bright and special shaped wire. Also Welded Wire Reinforcing and Galvanized Fabric, Nails, Continental Chain Link Fence, and other products.

(Concluded from Page 75)

uled to be completed next spring.

Jordan Electric To Move

Jordan Electric Products Div., Electric Storage Battery Co., will move its operations next month from Minneapolis to Clinton, Mass.

Will Expand Moline Plant

Herman Nelson Div., American Air Filter Co., plans to enlarge its facilities in Moline, Ill. It will build on land adjacent to its 25th Street plant.

Buys Metal Finishing Unit

Allied Research Products Inc., Baltimore, acquired the metal finishing operational assets and products of Wagner Bros. Inc., Detroit. Wagner is now divorced from the metal finishing field, but will continue to operate its subsidiary, Automatic Molding Machine Co. Inc. Allied offers a complete line of chemical and electrochemical processes, anodes, rectifiers, automatic equipment, and supplies for metal finishing. Allied has established branch administrative offices at 400 Midland Ave., Detroit, Mich.

CONSOLIDATIONS

H & B American Machine Co., Chicago, is negotiating to buy 80 per cent of the outstanding shares of **General Trading Co.**, St. Paul. H & B's principal business is the manufacture of components for aircraft. General Trading is a distributor of automotive parts and accessories, industrial supplies, heavy hardware, and steel products.

American Meter Co. Inc., Philadelphia, plans to purchase **Buffalo Meter Co.**, Buffalo. American Meter makes gas meters; Buffalo Meter, liquid meters.

Fyr-Fyter Co., Dayton, Ohio, acquired the machinery and equipment of **Kruger Mfg. Co.**, Buffalo, supplier of drawn steel and brass containers. The new facilities will enable Fyr-Fyter to fabricate brass and steel shells for its 1 qt to 2.5 gal dry chemical and liquid chem-

people
buy
Scott Wipers
for
many
reasons:

Mr. Swenson reports: "Prat-Daniel uses Scott Wipers for wiping bearings and shafts in the balancing department; for wiping steel plate prior to layout and processing; for wiping up oil and grease; for cleaning welders' face masks, and many other tough jobs."

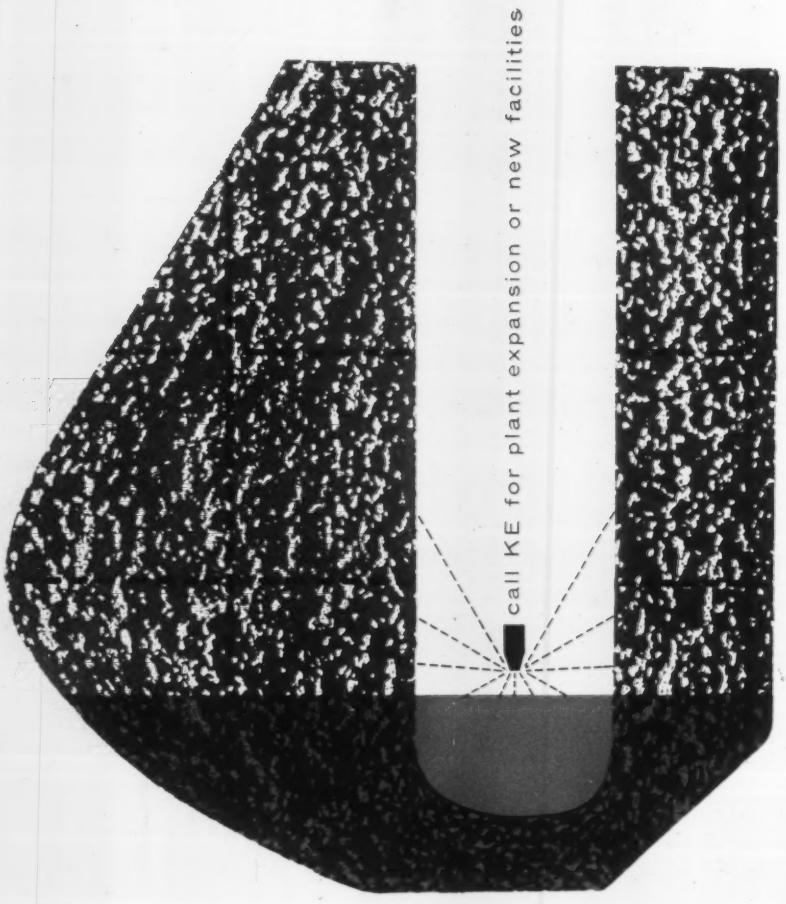
Prat-Daniel says: "We save 40% annually with Scott Wipers... and eliminated a fire hazard!"

The Prat-Daniel Corporation, South Norwalk, Connecticut, makes fan-stacks, fans, tubular and spiral dust collectors. Mr. Inge Swenson, General Superintendent, tells us: "We used waste before, and employees got the habit of letting oil-soaked heaps of waste accumulate. Now we dispose of Scott Wipers daily." As Mr. Swenson says, much work here is of a dirty, grimy nature, and employees like soft, absorbent Scott Wipers fresh from the box each time for wiping hands and face. Scott Wipers were first tested for 2 months in the bearings department —considered the toughest test—and their success here led to use throughout the plant. Annual savings: 40%.

SCOTT PAPER

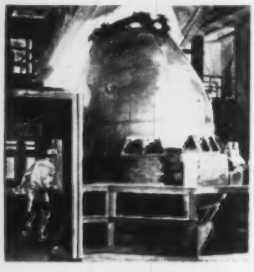
Get the Prat-Daniel case history and others, covering many fields, from your Scott distributor (Yellow Pages: "Paper Towels"). Or write: Scott Paper Company, Department S-86, Chester, Pa.

Maker of the famous Scott paper products you use in your home.
See "Father Knows Best" on NBC-TV.



INGENUITY

has made KE the experienced leader in L-D Process Steel



L-D process plant similar to that installed by KE at a major eastern steel plant.

Design and construction of over 2,000,000 tons of oxygen steel making capacity. Intimate familiarity with oxygen steel technology in all parts of the world. A pioneer's experience in applying tested techniques of steel making. U.S. licensor for the proven L-D process—also P.T. Oxygen Guns for present and planned open hearths.

These are reasons why Kaiser Engineers is uniquely qualified to develop your oxygen steel program. Another reason is traditional KE ingenuity—engineering and construction ingenuity which means your steel facilities will be completed more quickly, at lower cost, and operate more efficiently.

Economic analysis, plant location, engineering, design, procurement, expediting, construction—KE does one or all. With your first thought of new steel producing facilities—call KE.

KAISER ENGINEERS engineers—contractors
Contracting since 1914

Division of Henry J. Kaiser Company • Oakland 12, California • New York, Pittsburgh, Washington, D.C., Buenos Aires, Calcutta, Dusseldorf, Montreal, Rio de Janeiro, Sydney, Tokyo

4381

ical extinguishers, including certain vaporizing models. The new facility (Fyr-Fyter Shell Div.) will be managed by R. P. Kruger.

Commercial Filters Corp., Melrose, Mass., acquired **Industrial Filtration Co.**, Lebanon, Ind., and will operate it as part of Indiana Commercial Filters Corp. Commercial Filters is a subsidiary of Ogden Corp., New York.

Ferranti Electric Ltd., Toronto, Ont., is merging with **Packard Electric Co. Ltd.**, St. Catharines, Ont. The combined company will be known as Ferranti-Packard Electric Ltd. with headquarters in Toronto.

NEW PLANTS

American Can Co., New York, has placed in full commercial production its metal can plant at San Antonio, Tex., under the managership of J. T. Miller. Capacity: 275 million cans a year.

Dale Smith Automatic Screw Machine Products Co. expects to start operations about Aug. 1 at its plant at Whistler (Mobile), Ala. The firm will close its Silverhill, Ala., plant when the new one is completed.

Canadian Chromalox Co. Ltd. is moving into its plant at 210 Rexdale Blvd., Toronto, Ont. The firm makes electric heating elements.

Ardmore Products Inc., Kenilworth, N. J., opened its new plant at Roselle, N. J. Production space devoted to making textured metals is double that of the old plant.

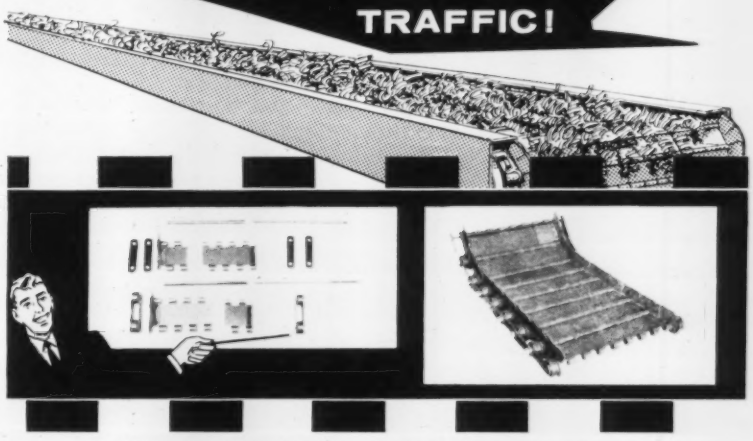
Four new metalworking plants have been established in Puerto Rico.

1. **R. E. Phelon Co.**, East Longmeadow, Mass., whose Conductors Inc., Carolina, P. R., will produce enamel coated magnet wire for ignition coils made in Puerto Rico by Elco Products Corp., Phelon's first island branch.

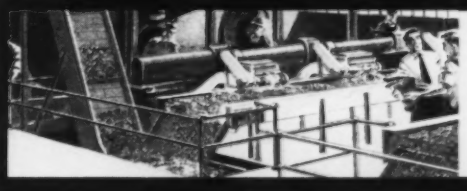
2. **P. L. Robertson Mfg. Co. Ltd.**, Milton, Ont., will produce cold headed, self-tapping, and wood screws in an 11,500 sq ft plant in

(*Please turn to Page* 84)

HERE'S A STEEL HIGHWAY FOR YOUR SCRAP TRAFFIC!



May-Fran Hinged-Steel Belting is assembled from mass-produced components to form a materials handling belting of almost any width, length or contour to meet individual specifications. Links are joined by means of steel rods . . . links, wings and side chain become integral unit.



Belting can be assembled in a wide range of lengths, widths and contours . . . to facilitate the handling of metal scrap, hot forgings, stampings, flash, wet or dry chips as well as other sharp or rough materials.

CHECK THESE FEATURES

- Handles heavy, hot and rough materials
- Engineered for the ultimate in working life
- Constructed for maintenance-free operation

Complete details including specifications and engineering drawings are available in Catalog MF-600. Send today!

7851-MF

MAY-FRAN HINGED-STEEL BELTING GIVES PRODUCTION SAVINGS THROUGH SCRAP HANDLING EFFICIENCY

Precision formed steel links are assembled in horizontal rows and joined by high-carbon steel tubes and connecting rods. These rods are fastened to side chains to support the belt links so they "float" freely, and side chain takes all tension. Wings remain positively engaged and in continuous overlap at all times, even over sprockets.

MAY-FRAN ENGINEERING, INC.

1725 Clarkstone Rd., Cleveland, Ohio

Please send me (free) MF-600

Name_____

Title_____

Company_____

City_____ Zone____ State_____

FLORIDA...

STEEL

industrially proved

1204 new industrial plants were established between January, 1956, and December, 1957, including all 21 "manufacturing" industries listed by Standard Industrial Classifications; bright outlook for metalworking subcontractors; no state income taxes.

Today, with cold, hard facts at their command, Florida businessmen can paint a picture of real industrial accomplishment.

For instance, in the two years from January, 1956, through December, 1957, 1204 new industrial plants were set up in the Sunshine State. There's diversity, too: all 21 types of industry regarded as "manufacturing" by Standard Industrial Classifications are represented in the State.

A broader look

During the past decade, Florida's picture of industrial progress has far exceeded U.S. averages:

Manufacturing employment up 74% from 1947 to 1957—U.S. average, 10%.

Expenditures on new plants and equipment up 60% from 1947 to 1955—U.S. average rose 37%.

Manufacturing payrolls up 190% from 1947 to 1957—U.S. average went up 87%.

Who's here, how they're doing

The roster of new arrivals is impressive: Sperry-Rand in Gainesville, General Electric in St. Petersburg, Martin Co. in Orlando, Chemstrand in Pensacola—the list goes on and on.

Industry is locating in all areas of Florida—in large cities and rural communities. Between Jan., '56 and Dec., '57, the record shows:
207 new plants in North Florida
366 new plants in Central Florida
631 new plants in South Florida

Excepting that used in manufacturing aircraft, Florida fabricating plants now use 25% of all aluminum produced in the entire U.S.

Many of these companies, and others, are talking about the bright outlook fast-growing Florida offers for sub-contractors—particularly in metalworking. From one end of the State to the other, companies cite tremendous sub-contracting opportunities in precision metal work, heat treating and finishing.

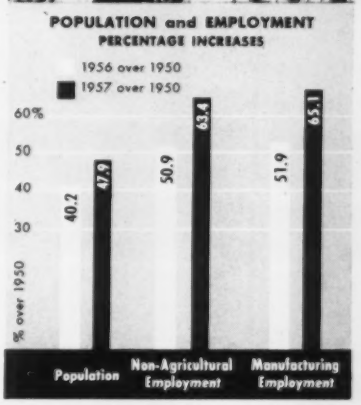
Florida firms in all fields are getting along splendidly from virtually every standpoint. Consider, for example, what Florida's manpower picture has meant to management here:

Absenteeism: An officer of Radiation, Inc., Melbourne, reports, "Absenteeism because of illness due to bad weather is almost unheard of." A Pan American Airways spokesman in Miami says key workers are easier to keep because of Florida's pleasant li ing conditions.

Skilled labor: Read ly recruitable in all fields. Pratt & Whitney, West Palm Beach, advertised for engineers, found applications for Flo ida jobs outdrew New England, Califo ia, and the Midwest by more than 20 to 1.

Chris-Craft Corp. moved its main offices to Pompano Beach last year, is building cruisers in its new home.

But the best criteria of industrial success are Florida's many plant expansions and additions. Typical examples: Escambia Chemical Corp., Milton, recently built a new plant for producing polyvinyl chloride, is completing another for the manufacture of methanol. Burlington Hosiery Co., Green Cove Springs, upped its labor force 400% in three years. In Miami, Eastern Air Lines, National Airlines, Pan American Airways and Northeast Airlines are all building or planning to build major jet aircraft maintenance bases.



From Dec., 1956, to Dec., 1957, Florida led all other states in numerical gain in manufacturing employees.

ADDITIONAL FLORIDA NOTES: **State and local governments and communities want industry, cooperate in helping firms get established . . . no State income taxes, corporate or individual . . . state-wide natural gas is in the offing . . . transportation is excellent.**

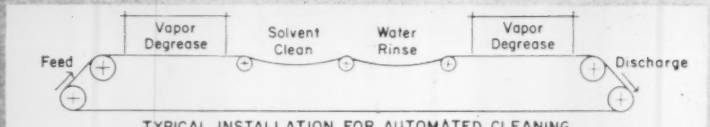
Florida facts, figures . . . and surveys

The Industrial Services Division of the Florida Development Commission has prepared all-new factual studies on Markets, Manpower, Taxes, Transportation, Resources, Living Conditions, Research, Power and Water. These studies are available to you at your request.

In addition, the Industrial Services Division will gladly conduct special studies and assist in selecting sites. All inquiries are held in strictest confidence. Write today to Florida Development Commission, 3714-1A Caldwell Building, Tallahassee, Florida.

Come see Industrial Florida for yourself. Write State of Florida, Dept. M, Caldwell Bldg., Tallahassee, for new 100-page color Vacation Guide Book to help plan an all-Florida tour.

Cambridge WOVEN WIRE BELTS



TYPICAL INSTALLATION FOR AUTOMATED CLEANING

Open mesh assures product uniformity in continuous processing

Cambridge Woven Wire Belts provide thorough, uniform degreasing or washing because cleaning solutions and vapors circulate freely *through* the open mesh of the belt to reach all parts of the product. In one continuous operation, parts can be carried through a degreasing, rinse, degreasing cycle to maintain capacity production. In heat treating, brazing, annealing and quenching operations too, Cambridge belts cut operating costs and increase production. Here's why:

CONTINUOUSLY MOVING BELT ELIMINATES BATCH PROCESSING for faster, more economical production.

ALL-METAL CONSTRUCTION RESISTS CORROSION, HEAT; takes temperatures up to 2100° F.; has no seams, lacers or fasteners to weaken or break.

OPEN MESH ALLOWS RAPID DRAINAGE of process solutions; assures thorough immersion of product.

SPECIAL CROSS FLIGHTS OR RAISED EDGES are available to hold product on belt during inclined movement.

Talk to your Cambridge FIELD ENGINEER soon — he'll explain the many advantages of continuous heat treating on Cambridge belts. And, he'll recommend the belt size, mesh or weave — in the metal or alloy — best suited to your operations. You'll find his name in the classified phone book under "BELTING, MECHANICAL". Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

Department J,
Cambridge 6,
Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

(*Concluded from Page* 81)

Rio Grande, operating under the name Pan American Screw Corp.

3. **Girard Metal Furniture Mfg. Corp.**, Rio Piedras, will produce chrome steel-Formica top dinette sets in a 21,390 sq ft plant.

4. **Anvil Metal Products Inc.**, Barranquitas, will make cooking utensils and metal parts for trophies, lamps, and flowerpots in a 6000 sq ft plant.

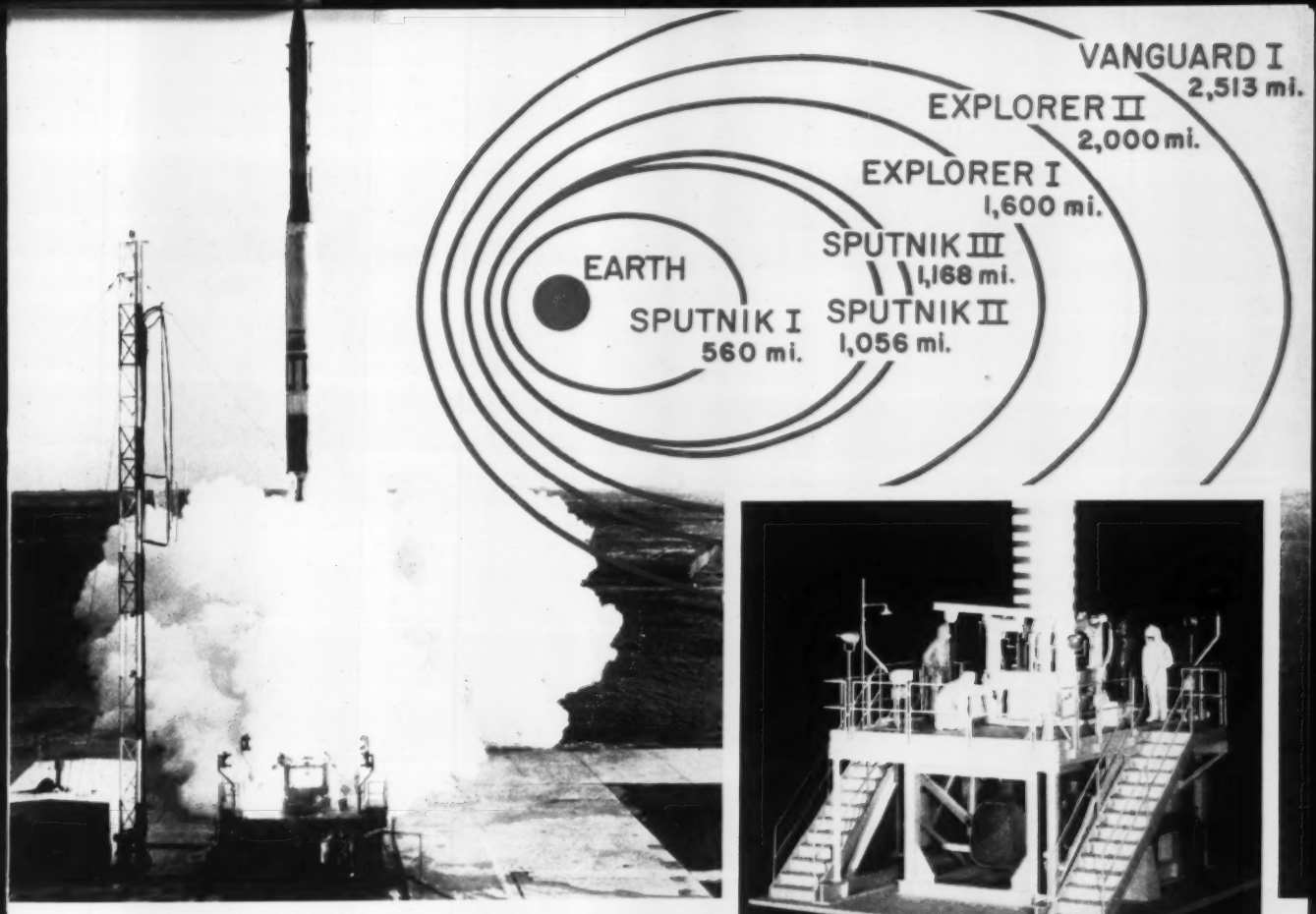
ASSOCIATIONS

Richard W. Crannell, Lehigh Foundries Co., a division of Lehigh Inc., Easton, Pa., was elected president of **Malleable Founders' Society**, Cleveland. Other officers are: Vice president, D. V. Walker, Eberhard Mfg. Co., division of Eastern Malleable Iron Co., Cleveland; treasurer, Roy Willison, National Malleable & Steel Castings Co., Cleveland; secretary and executive vice president, Lowell D. Ryan.

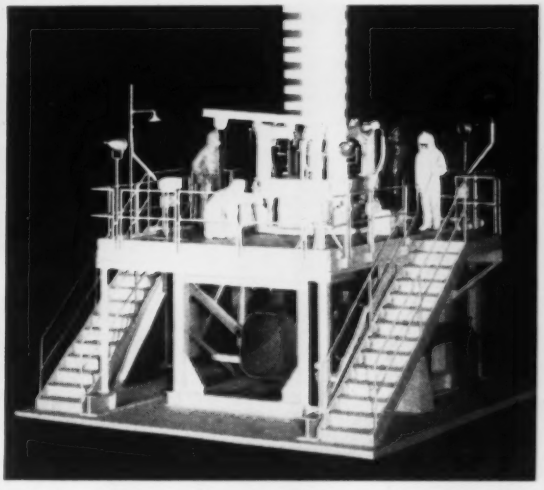
American Society for Testing Materials, Philadelphia, named these officers: President, K. B. Woods, Purdue University, Lafayette, Ind.; senior vice president, F. L. LaQue, International Nickel Co., New York; vice president, A. Allan Bates, Portland Cement Association, Chicago.

Harry B. McClure, vice president, Union Carbide Corp., New York, was elected chairman of the board of directors of **Manufacturing Chemists' Association**, Washington. Other officers are: President, Gen. John E. Hull (ret.); vice presidents, D. S. Frederick, Rohm & Haas Co., Philadelphia, and Fred C. Foy, Koppers Co. Inc., Pittsburgh; secretary-treasurer, M. F. Crass Jr.

American Iron Ore Association, Cleveland, elected these officers: Chairman, H. C. Jackson, Pickands Mather & Co., Cleveland; president, F. G. Pardee; vice president and secretary, Hugo E. Johnson; vice president, H. S. Taylor, Oglebay Norton Co., Cleveland; vice president, W. A. Sterling, Cleveland-Cliffs Iron Co., Cleveland; treasurer, A. B. Rathbone, Oglebay Norton Co.; assistant treasurer, G. E. Guthrie, Oglebay Norton Co. The association enlarged



Vanguard I being launched into orbit from Loewy-Hydropress flight-firing installation at Cape Canaveral, Fla.



Scale model of Loewy launching platform and rocket stand.

Loewy launching installation helps boost American moon to highest altitude of all satellites

On March 17, the Navy's Vanguard rocket, built by The Martin Company, soared from its Loewy-Hydropress launching installation into the blue and into orbit at the greatest altitude of all satellites—2500 miles from the earth at apogee.

When Vanguard misfired, on December 6, 1957, in this country's first attempt to put up a satellite, the conflagration could have completely destroyed the launching facilities. But Loewy had designed and built them so well that damage was extremely limited. The fire-fighting system released a torrent of water fog to combat the intense heat of the burning rocket fuels. Within an hour of the mishap, Loewy engineers were assessing the damage and lining up repair crews. Within a week, the static and flight-firing facility was repaired, and Vanguard's second stage was erect and under test. One more week and the first stage stand and weight recording system were completely repaired and operational.

The launching pad is 15 x 20 ft. in area. On it is erected a 6-ft. cubical test and flight-firing stand. Equipped with mechanical, hydraulic and electronic instrumentation, a unique flame-deflecting system and fail-safe devices, this installation has the function of static testing and flight firing. It also weighs the rocket and its fuel and measures the thrust of the first and second stage engines.

Because of its experience in missile launching and handling systems, Loewy-Hydropress is the coordinating agency for the combined rocketry facilities of all Baldwin-Lima-Hamilton divisions. Consult us about any problems that may confront you in research, development, design, construction or manufacturing for the structural, hydraulic, electronic and thrust measurement elements. Write to Dept. B-6.

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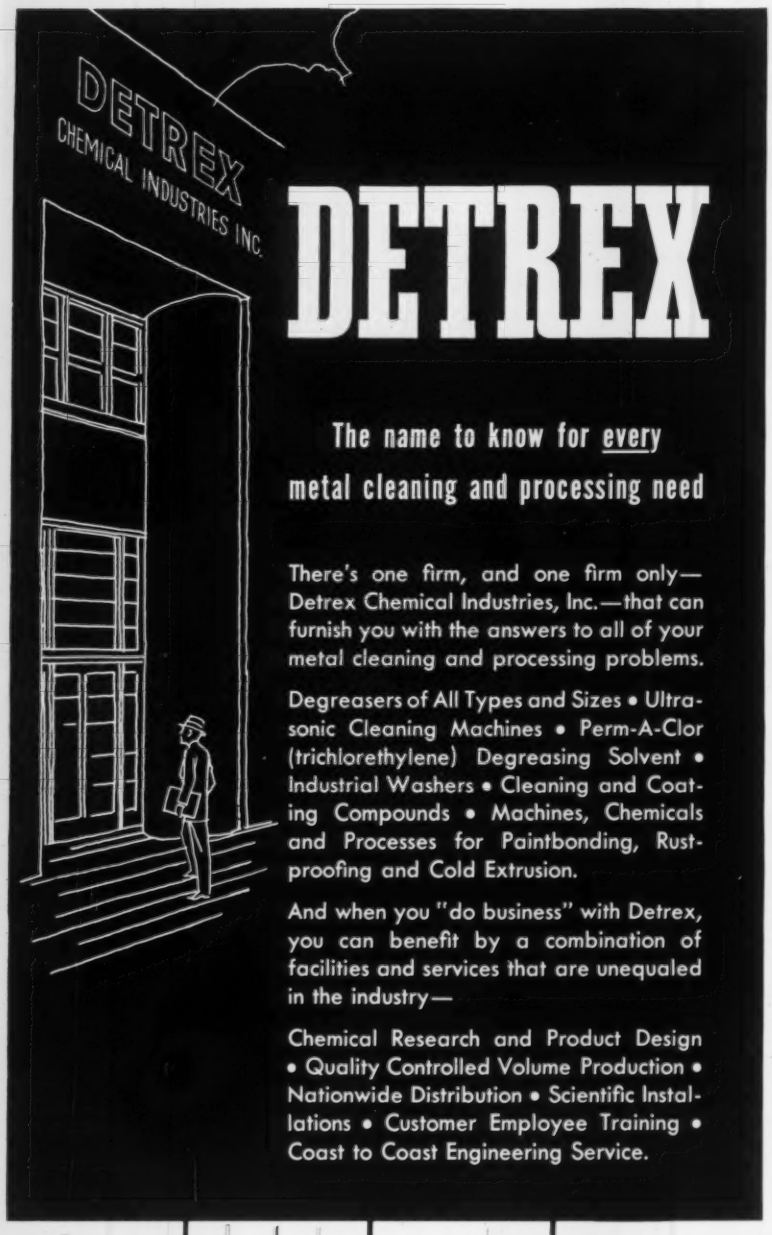

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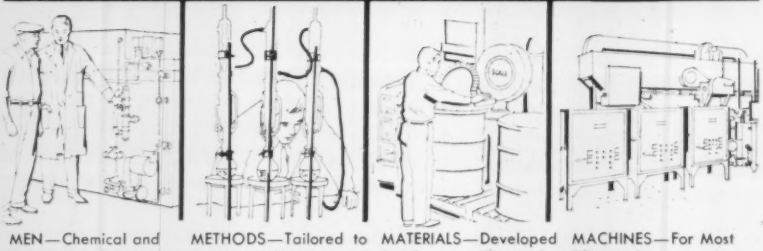

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the board of directors to 14, electing these new members: A. F. Peterson, Bethlehem Steel Co., Bethlehem, Pa.; M. S. Fotheringham, Steep Rock Iron Mines Ltd., Steep Rock Lake, Ont.; and George B. McMeans, Kaiser Steel Corp., Oakland, Calif.

Industrial Diamond Association of America Inc., Pompton Plains, N. J., elected these officers: President, Morris Winston, Diamond Drill Carbon Co., New York; first vice president, D. J. Wallace, Wheel Trueing Tool Co., Detroit; second vice president, Bernard Jolis, U. S. Industrial Diamond Corp., New York; secretary-treasurer and executive manager, Mrs. M. J. McGinnis.

Dr. Robert H. Read has been named supervisor of powder metallurgy research at **Armour Research Foundation of Illinois Institute of Technology**, Chicago.

Pacific Northwest Steel Fabricators Association, Seattle, elected these officers: President, Edward Allen, Star Iron & Steel Co., Tacoma, Wash.; vice president, H. P. Kibbey, Gate City Steel Co., Boise, Idaho; secretary-treasurer, W. S. Leckenby, Leckenby Structural Steel Co., Seattle.

NEW OFFICES

Commercial Shearing & Stamping Co., Youngstown, opened a sales office at 1371 Peachtree St. N.E., Atlanta, Ga. The firm produces stampings and upset forgings; fabricates tunnel liner plates and support steel for tunnels and other excavations; and makes fluid power pumps, motors, valves, and cylinders. M. E. Stewart is southeastern regional manager.

Hoerbiger Corp. of America opened headquarters at 160 Van Brunt St., Brooklyn 31, N. Y. The firm makes valves and valve components, compressors and compressor regulators, and related products.

Industrial Div., Armstrong Cork Co., Lancaster, Pa., opened a Los Angeles district office to handle high temperature gasket stocks for the aircraft and oil refining industries.

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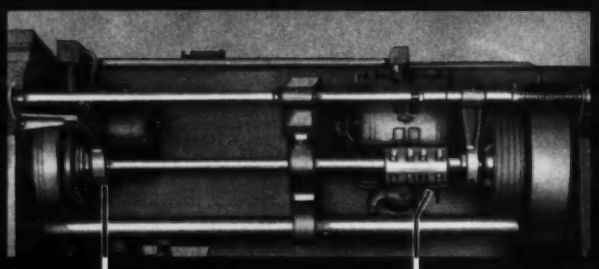
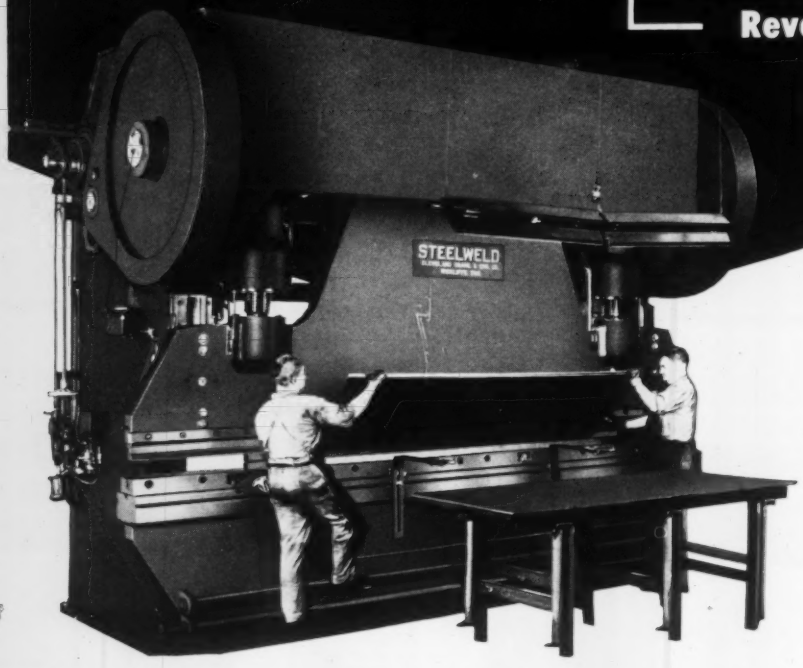
Reversing Ram Simplifies Press Operation



Reversing Ram Drive | Standard Ram Drive



Model MO 6-12. Handles plate to 16'-6" x 7/16". Other Steelwelds available for working plate to 24 feet and thicknesses to one inch.

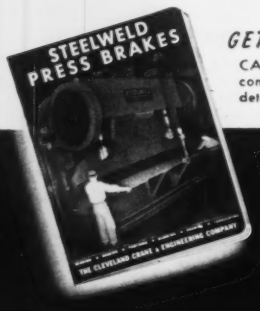
With a reversing ram drive you can back the ram or upper die away from the work at any point in the stroke. It is not necessary for the ram to continue through in one direction as when only the normal press drive is provided.

This feature speeds locating the correct ram position to achieve a specified bend or shape. It saves time and spoilage when trying new dies.

Reversing ram machines have two complete drives, including motor, flywheel and clutch. They are controlled by individual foot pedals on two different shafts, located one above the other across the front of the press.

The reversing ram feature is optional and may be provided on any Steelweld Bending Press. It adds greatly to the ease of operation and because of time-savings it enables, rapidly absorbs the extra original cost.

Steelweld Bending Presses are such versatile tools with so many outstanding features that we urge you to learn all about them. As a starter, send for the catalog below.



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Technical Outlook

OVERCOAT TO SHIELD ALLOY—A new ceramic coating less than 0.002 in. thick increases the hot strength and corrosion resistance of lightweight magnesium-thorium alloys. Convair missilemen worked with engineers at the Bettinger Corp., Waltham, Mass., to develop and apply the coating. Result: A lighter, more efficient missile.

BETTER INGOT SURFACES—Armco Steel Corp., Middletown, Ohio, reports that an ingot mold coating called Albi MRX (Albi Mfg. Co., Rockville, Conn.) reduced scabs, blisters, surface laminations, and slivers—and cuts costs. On a large production run of cold-reduced sheets, rejects were cut 30 to 50 per cent. A saving of greater than $3 a ton was gained at a coating cost of 12 cents a ton, including labor for applying the coating.

TRIM SHIMS—You can adjust the thickness of shimming by making it from laminated aluminum. Sheets 0.003 in. thick are held together with a bonding material or simply tacked at the edges. The two types are called Laminum and Lamisol and are made by the Laminated Shim Co., Glenbrook, Conn.

ELECTRIC SMELTING—All the talk about fluidized bed, rotary kiln, sintering strand, and other proposed and working methods for directly reducing iron ore tends to obscure the rise of the electric smelting furnace. There are 30 Tysland-Hole furnaces (Elektrokemisk of Norway) in operation, 20 more under construction—and this furnace is only one of several types available. Nine of the new furnaces are going into South America.

BLOCK BUILT—It is possible to put a furnace wall together in a hurry with hollow "Furnace Blok." The blocks are laid up without mortar, then turned into a monolithic structure by pouring castable refractory into the hollow center. The blocks are made of Moldit castable refractory produced by Refractory & Insulation Corp., New York. One Furnace Blok equals 11 to 16 typical firebricks in volume, and construction is said to be 15 times as fast as normal bricklaying.

POCKET PAGE—GM's AC Spark Plug Div., Flint, Mich., has an electronic device that simplifies the problem of getting people to respond to calls in crowded, noisy places. Called Vilbracall, it is carried in the pocket and vibrates when a signal is sent from the office. When you feel the tickle, you go to the nearest phone and dial your office. It marks the final breakthrough into man's last inner sanctum—the washroom.

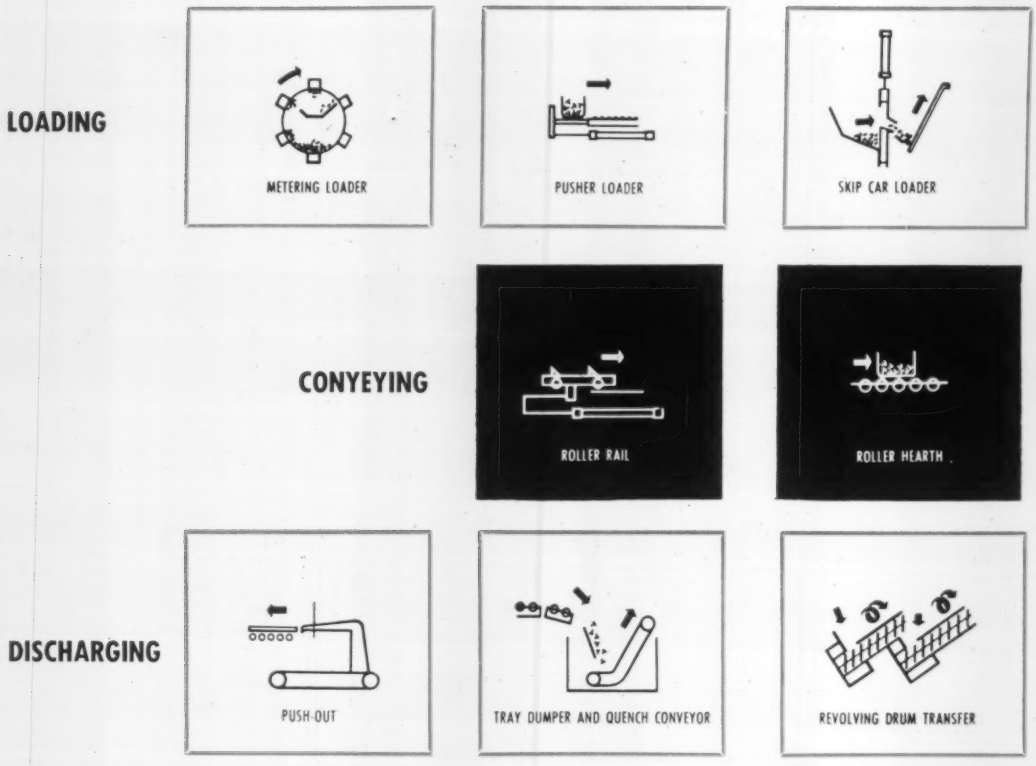
"REPRINTED" CIRCUITS—New developments require new tools, and so it is with the printed circuit. Motorola Inc. markets a printed circuit repair kit: Nippers, solder, miniature soldering iron, brushes, protective fluid, solvent, and a magnifying glass.

CYCLOSTEEL MOVES ON—The British Iron & Steel Research Association reports that the cyclone combuster originally designed for coal firing had to be redesigned for a single tangential-entry burner for coal, iron ore, air, and oxygen. Arrangements have been made for cleaning, cooling, and disposing of the gaseous products. Molten metal has been produced, but the amount of fuel used has been excessive because heat losses are greater than expected.

CORRUGATED CORE—There's less damaged steel at Armco Steel Corp.'s Ashland, Ky., plant, now that corrugated steel culvert cores are used as inserts to keep light gage coils from collapsing under mill handling and shipment.

HOW MUCH BORON?—A simple and reliable method for determining small amounts of boron in steel has been developed by Battelle Memorial Institute, Columbus, Ohio. The chemical-spectrophotometric method is said to have an accuracy of 5 to 10 per cent at the 50-ppm boron level.

Metalworking Outlook—Page 41 Market Outlook—Page 125



18 Ways To Move Parts in a Furnace

If you're planning to grow out of the mechanical batch furnace stage, you should consider devices like those illustrated—they are being used in automated heat treating lines

MODERN, automatic heat treating depends heavily on loading, conveying, and discharging devices.

Process engineers have a wide variety on which to draw for their designs. Here are some they can use to automate a heat treat line.

Loading Devices

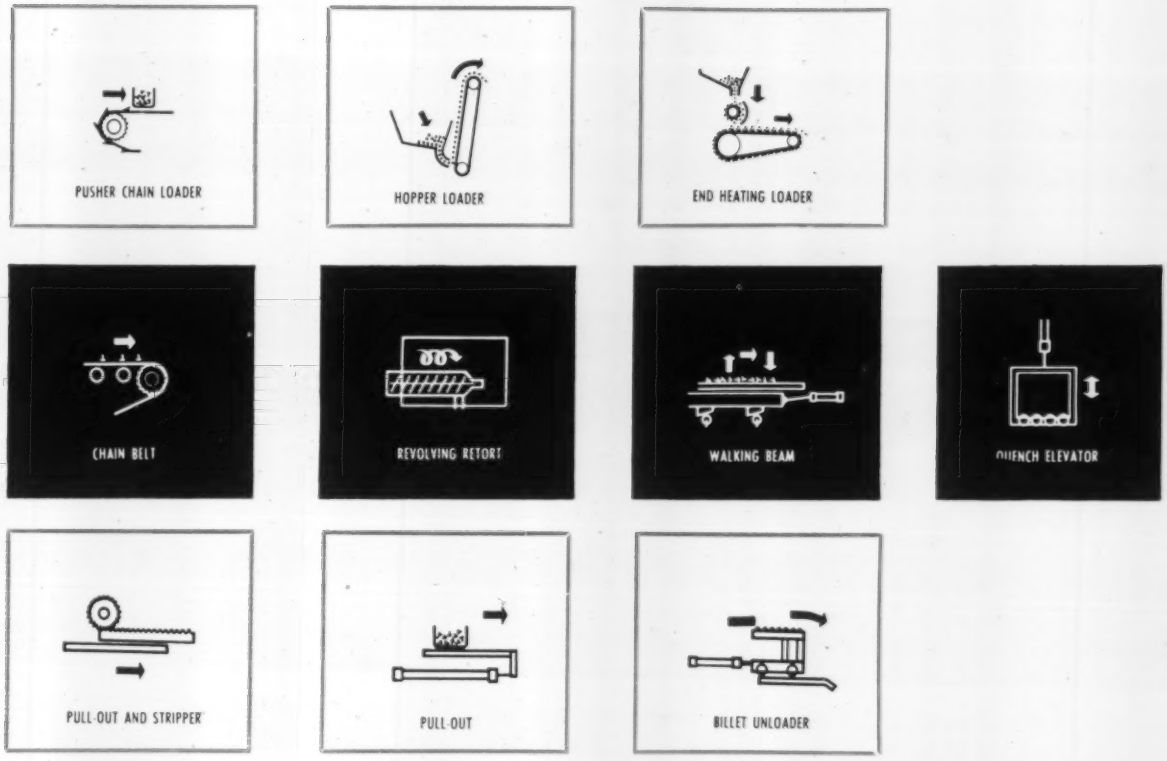
Conveyors load, push, pull, raise, lower, and unload workpieces. Parts can be charged in a basket, fixture, or by direct piece-to-piece contact. Heavier loads in long furnaces without controlled atmospheres can be pushed through on roller rails that extend beyond the charge and discharge doors. A pusher under the roller rails permits work tray access from all directions and straight through movement.

Selecting an automatic mechanism is normally dictated by the time cycle of the process, the size, shape, weight, and hourly volume per hour of parts. Some devices accurately feed small parts to flat surface conveyor belts under a timed cycle. They are usually oscillating or drum designs, although continuous flighted belts are often used. Devices operating like a beam scale meter parts according to a weight adjustment.

Conveying Mechanisms

Roller, rail, roller hearth, chain belt, revolving retort, walking beam, and elevator arrangements are shown in the drawings above. Weight, size, and part shape are again factors in proper selection. Also, the maximum furnace operating temperature dictates conveyor design and the type of metal used to economically withstand the effects of heat.

When push-pull mechanisms are used for a batch furnace, trays or baskets are linked together. The reciprocating action can be inter-



By DONALD BEGGS
Research and Development Manager
Surface Combustion Corp.
Toledo, Ohio

locked with the furnace door for fully automatic operation. A motor driven chain can actuate an arm that pushes the load forward into the heating chamber at the beginning of the cycle and withdraws the work by hooking the tray at the end of the cycle.

Continuous, straight through, double end furnaces may be equipped with a pusher on the charge end. You can use gravity discharge, or charging mechanisms operating in reverse. There are two types: Mechanical linkages and pneumatic or hydraulic cylinders.

How mechanical type works: A motor driven reversible chain actuates a dog that pushes the last tray for forward movement. It can be automatic or semiautomatic.

How pneumatic type works: A rocker arm is often used to actuate a dog located under the roller rails of the charger. Hydraulic cylinders or mechanical screw pushers are commonly used for uniform, smooth forward movement.

Discharge and Transfer

An automatic dumper at the discharge end of the hardening furnace can pull the heating trays from within the heating chamber, through the open door, and position the trays on an automatic turnover. After the trays are out, the door is automatically closed. The dumper clamps the trays automatically and rotates them 180 degrees. All the parts fall from the tray into the quenching oil.

The revolving drum transfer device like that illustrated is similar to a revolving retort which conveys parts through the furnace. Both use the screw principle. In this application, the drum is perforated and is inclined.

Control Devices

Much of automation efficiency depends on controls. In heat treatment, they are especially vital to quality. Without automatic pyrometer controllers or time cycle controls, for example, automatic flow of work through the furnace would be of little value.

The dew point method of determining carbon potential is widely accepted. Surface Combustion Corp., Toledo, Ohio, has developed a completely automatic unit called Autocarb. It controls the dew point of a gas atmosphere. This control may be at the gas generator or in the furnace heating chamber. The result is control of carbon potential in the heat treating atmosphere. The unit has automatic compensation for varying carbon demand by the work being treated.

Design of automatic handling devices is no problem after a product is standardized. The decision to automate can be justified by reasons like these: Increased production, duplication of results by minimizing human error, reduction of unit costs by more efficient handling, increased use of limited floor space by closer grouping of furnaces, elimination of loss of material by reduction of scrap and rejects, and combining several operations.

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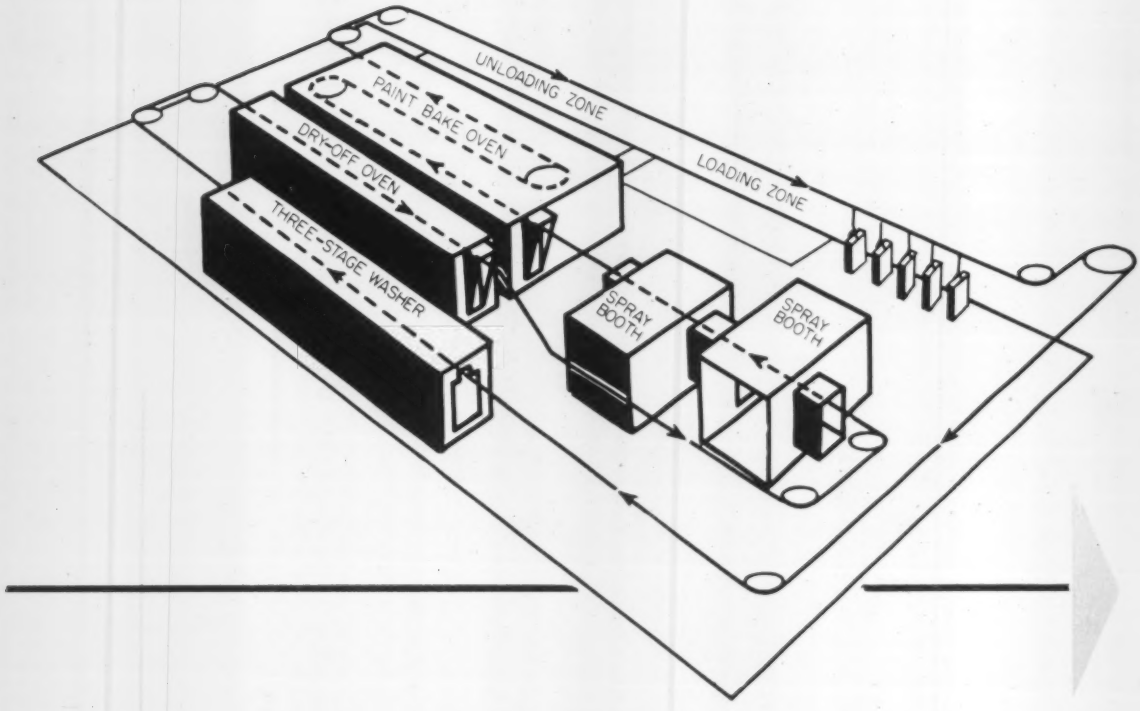


Mechanized

Production Capacity: Up 300 per cent

Production Costs (on large parts): Down 67 per cent

Direct Labor Costs: Down 50 per cent

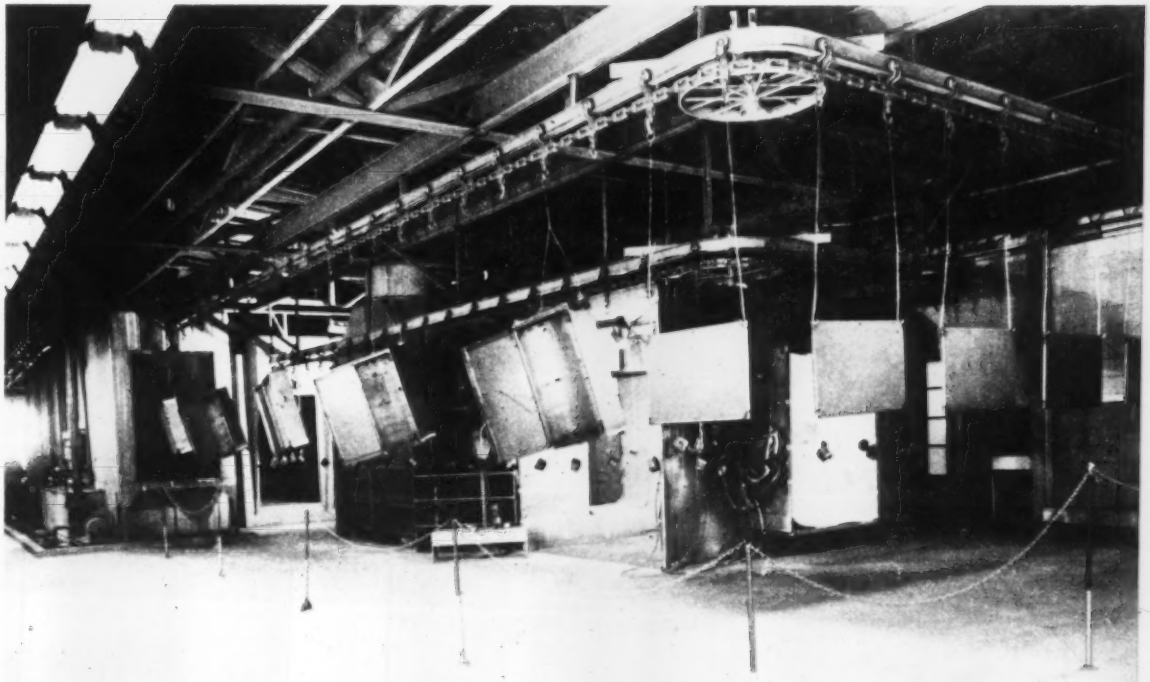
HIGHER production and lower costs: That's the story on the new conveyorized finishing system at Hoffman Engineering Co., Anoka, Minn.

The company's line of fabricated steel products ranges from small electrical outlet boxes to 5-ft panel enclosures. The new finishing system—it includes a three-stage washer, dry-off oven, two water-wall spray booths, and a bake oven—enables Hoffman to do all finishing operations except one (spraying) automatically.

"Product finishing that used to take three 9-hour shifts is done in one shift," says R. C. Kravik, general manager. "We have been able to cut direct labor costs on the finishing line 50 per cent, and unit finishing costs on large parts have been reduced about 67 per cent."

Used to Batch Finish—Hoffman's old method started with loading parts into baskets and processing through separate degreasing, pickling, phosphating, and rinse tanks. The prepared pieces were then trucked to the paint booth, painted, moved to the batch oven, and loaded on racks for baking. Handling costs were excessive.

New System Is Continuous—The loading and unloading zone of the conveyor system is 68 ft long; it provides an ample work area for part handling. Hooks and clamps are used to secure the large boxes and doors for steady travel along the



Finishing Boosts Profits

overhead monorail conveyor. Small parts may be mounted on racks, as many as 16 per rack, and suspended on the conveyor.

Conveyor speed can be varied from 3 to 9 fpm. Speed controls are at the first spray booth to give the painter complete control of the system.

Washer Can Be Expanded—The first phase of the operation is to prepare a surface that is clean and will hold the paint. The Hoffman system uses a three-stage washer 45 ft long. Stages: 1. Clean and phosphate. 2. Rinse in water. 3. Rinse in hot chromic acid.

In laying out the system, provision was made to expand the washer to five stages.

From the washer, products travel through the dry-off oven. The unit, 38 ft long, may be operated at temperatures up to 450° F. By the time products reach the first spray booth, they are cool enough to paint.

Painting Is Rapid — Panels and boxes are painted in two, 10 ft, water-wall spray booths. Spraying is confined to one direction (into the water wall) to assure maximum disposal of overspray. The two booths face in opposite directions to make it easy for two men, one in each booth, to paint both sides of large products.

Conventional primer and finish coat paints may be applied interchangeably in the booths. A week's production of one product involving one paint makes it feasible to reclaim the overflow. Reclamation of intermixed paints is not practical.

Baked in Three Passes—Newly painted pieces are conveyed directly into the gas-fired bake oven for curing. Although only 38 ft long, the oven provides maximum baking time through three passes. With a conveyor speed of 5 ft a minute, total baking time is 25 minutes.

Hoffman uses the oven at temperatures up to 450° F, depending on conveyor speed, room temperature, and optimum curing temperature for the paint involved. Lacquers are dried at room temperature.

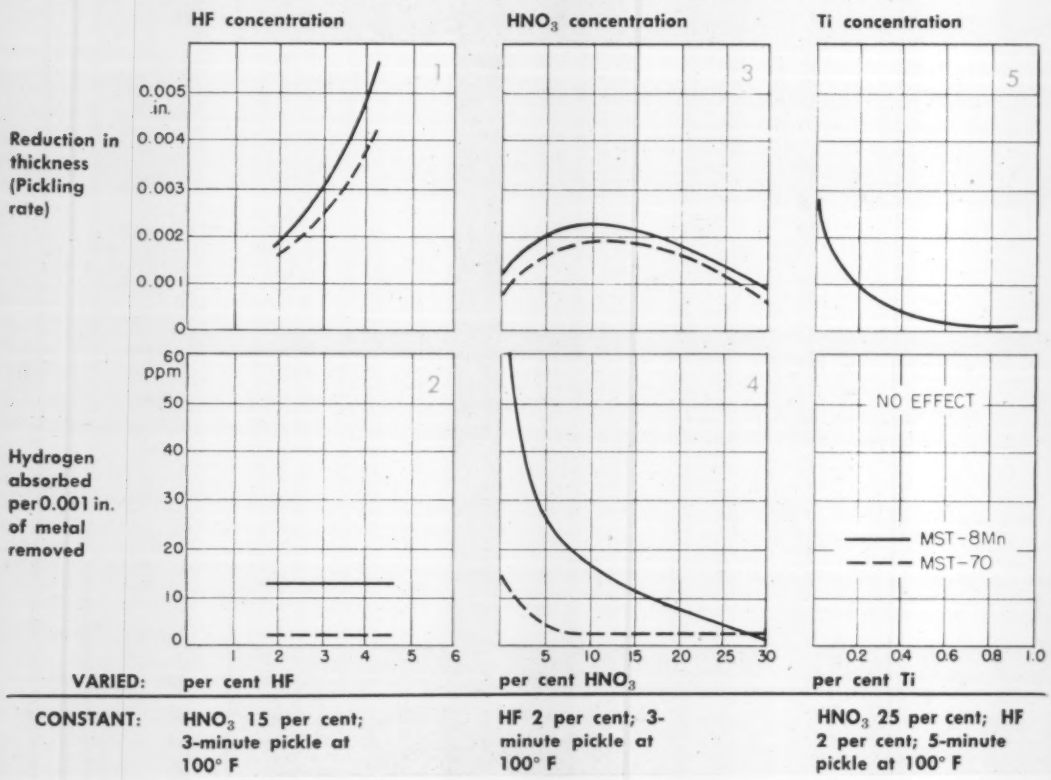
Products emerging from the oven are sufficiently cooled for handling and packaging by the time they reach the unloading zone.

Buy Unit with Savings — The continuous finishing system, installed by Despatch Oven Co., Minneapolis, is one of the results of a management-instituted program of determining where major costs are and doing something about them.

Hoffman bought the system because a forecast showed it could be paid for in two years out of savings in labor costs.

Pickling Titanium?

Here's what happens to the pickling rate and hydrogen pickup when you change . . .



Pin Down Titanium Pickling Variables

Research done by Mallory-Sharon Metals Corp. reveals the parts that five variables play in the rate of hydrogen absorption and metal removal

By M. E. KOMP
Chief, Chemical Metallurgy
and DR. DILLON EVERS
Manager of Research
Mallory-Sharon Metals Corp.
Niles, Ohio

HYDROGEN absorption is the main problem in pickling titanium in nitric-hydrofluoric acid solutions. Hydrogen is detrimental to mechanical properties—150 ppm is usually the maximum allowable.

Of course, the rate of metal removal is also important and has to be balanced against the rate of hydrogen absorption. The major pickling bath variables which control both rates are:

1. Hydrofluoric acid concentration.
2. Nitric acid concentration.
3. Dissolved titanium concentration.
4. Temperature of the bath.
5. Rate of agitation.

The effect of each has been studied at Mallory-Sharon Metals Corp.

HF Concentration—The effect of hydrofluoric acid concentration on the pickling rate and hydrogen absorption of MST-70 (commercially pure titanium) and MST-8Mn (titanium, 8 per cent manganese) sheets is shown in Fig. 1. Metal removal (in 3 minutes) proceeds at an increasing rate as the hydrofluoric acid content of the bath is increased from 2 to 4 per cent by weight.

But hydrogen absorption per unit of thickness removed is not affected by hydrofluoric acid concentration in the range studied (Fig. 2). The amount of hydrogen absorbed by an MST-70 sheet was negligible in all the solutions tested.

HNO_3 Concentration — Nitric acid effectively reduces the amount of hydrogen absorbed. In Fig. 4, hydrogen absorption by MST-8Mn sheets can be seen decreasing rapid-

TITANIUM PICKLING . . .

ly as the nitric acid concentration is increased from 0 to 5 per cent, then less rapidly as the nitric content is further increased to 30 per cent.

MST-70 absorbs much less hydrogen than MST-8Mn, especially in lower nitric acid content baths. In fact, hydrogen absorption by MST-70 is negligible in all the solutions tested except straight 2 per cent HF.

The thickness removed from both alloys increases as the nitric content is increased from 0 to 10 or 15 per cent, then decreases as the nitric content is further increased to 30 per cent (Fig. 3).

Ti Concentration—The effect of dissolved titanium is shown in Fig. 5. The pickling rate decreases rapidly as the titanium content of the bath is increased from 0 to 0.25 per cent, then less rapidly as the titanium content is further increased to 1 per cent.

Hydrogen absorption per unit of thickness removed is not affected appreciably by the titanium content of the pickling bath.

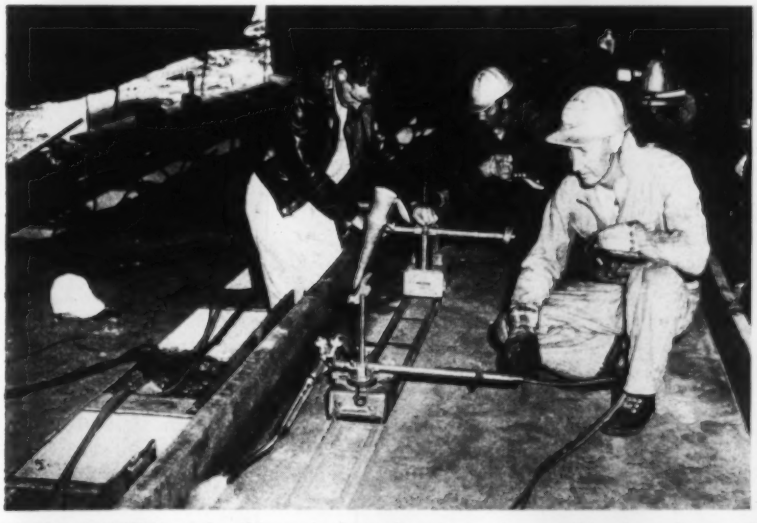
Bath Temperature—The pickling rate increases rapidly with increasing temperature in the 2 per cent HF, 15 per cent HNO_3 solution (Fig. 7). Temperature has little effect on the pickling rate in the 2 per cent HF, 25 per cent HNO_3 solution.

Hydrogen absorption increases somewhat with increasing temperature in the 2 per cent HF, 15 per cent HNO_3 solution, but this may be due to loss of nitric acid through decomposition at elevated temperatures (Fig. 8). There is no appreciable hydrogen pickup in the 2 per cent HF, 25 per cent HNO_3 acid.

Agitation—Tests indicate that the pickling rate increases somewhat with increasing agitation speed, but that agitation has little or no effect on hydrogen absorption. However, more recent tests at Mallory-Sharon have indicated that high agitation speeds may increase hydrogen pickup in some alloys.

Theory — Based on those and other tests, it is believed that titanium is first activated by the dissolution of its passivating oxide film, which renders the metal vulnerable to acid attack. Probably there is alternate activation and passivation at the surface of the metal; the hydrofluoric acid tends to activate, and the nitrate ion tends to stabilize the oxide film.

Susceptibility—The experience at Mallory-Sharon has been that the all-alpha-phase alloys, such as MST-70, are not especially susceptible to hydrogen contamination during pickling, but alloys containing appreciable amounts of beta phase are quite susceptible unless the nitric acid content of the bath is kept above 25 per cent. This is probably due to the greater solubility and diffusivity of hydrogen in beta titanium than in alpha.



SPECIAL FLUXING and mild steel electrode wire make possible the submerged arcwelding of this 80 ft girder made of 2 in. T-1 steel. Squirtwelder mounted on cutting buggy is between preheating torch and flux recovery unit. Flux formula is from Lincoln Electric Co., Cleveland

Glass Tubes Form Cores

A unique method of forming tiny cored holes in high temperature cast metal parts has been developed by Corhart Refractories Co. Inc., a subsidiary of Corning Glass Works.

High accuracy Vycor glass tubing with an outside diameter as small as 0.020 in. is fixed to the casting mold before pouring. The 96 per cent silica glass can withstand temperatures over 3000° F.

One application is in casting turbine blades for jet engines. The cored holes permit passage of a coolant which lowers the blade temperature and effectively raises the engine service temperature.

Brake Uses 7-in. Plates

A massive press brake (it has 1500 tons of bending capacity) in operation at the Alcoa, Tenn., plant of Aluminum Co. of America uses some of the heaviest steel plates ever produced by Lukens Steel Co. on its 206-in. rolling mill.

Built by Cincinnati Shaper Co., Cincinnati, the brake has a 34-ft die surface and weighs 354,000 lb. From a cost standpoint, says the builder, it would have been impractical to produce the machine if heavy plates were not available.

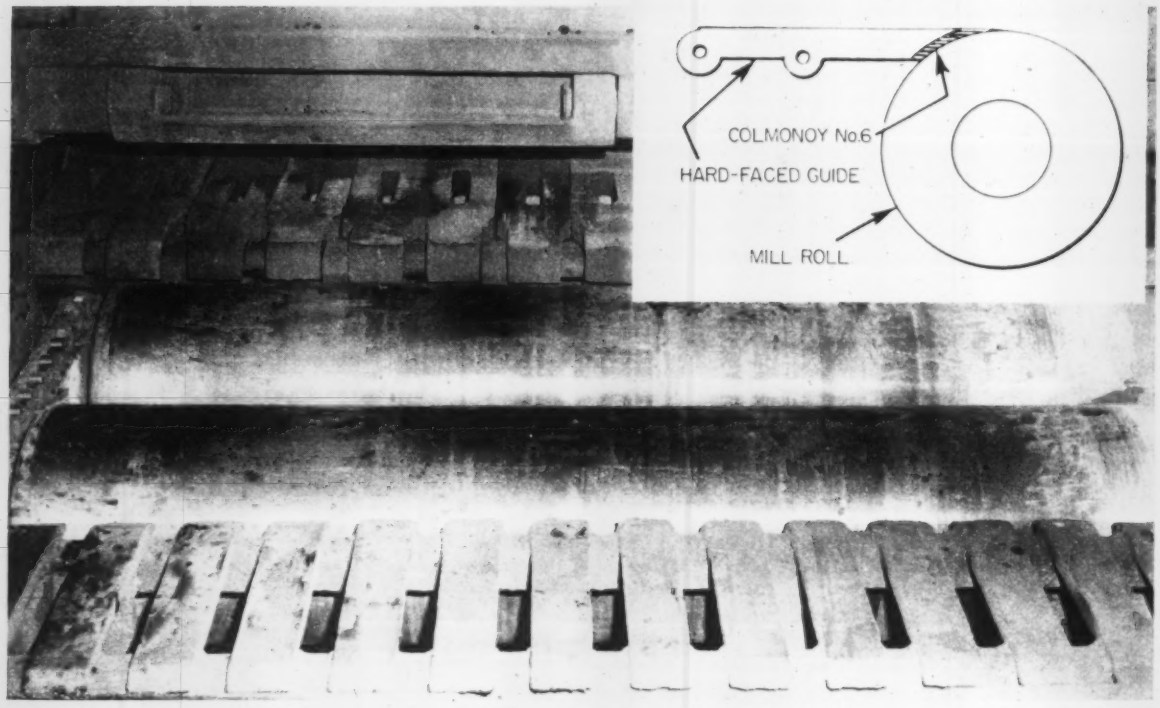
Lukens shipped a carbon steel plate 114 in. wide, 34 ft long, and 7 in. thick from which the ram plate was cut to shape. The plate weighed 46 tons.

Alloy for Below Zero Use

Lukens Steel Co., Coatesville, Pa., has begun production of a high nickel, low carbon steel that has high impact resistance and strength at temperatures as low as −320° F.

Called Lukens Nine Nickel, the material is available as plates and head shapes at about one-half the cost of other materials previously used in extremely low-temperature service, states the producer. It has a minimum tensile of 90,000 psi and a minimum yield of 60,000 psi. Lukens says the material can be welded by established techniques.

Lukens believes that chemical processing is the largest potential market at present. Other possible applications include aircraft and missile development programs.



Here's how roll guides are installed in a plate mill. Inset shows how guide bears on mill roll and suggests the reason why an improper surface can mark and score the roll

Hard Facing Adds to Guide Life

Rolling mill uses welds for a supertough metal overlay on its roll guides. The move increased wear life three times. Maintenance problems said to have been cut 300 per cent

HARD-FACED roll guides last three times as long as unprotected guides in a steel plate mill.

Hard facing can also solve many maintenance problems. In this case, savings in repair labor came to 300 per cent.

Texas Experience—The roll guides shown in the illustration are used in a 4-high plate mill in eastern Texas. Since the guides touch the mill rolls at all times, contact surfaces must be made of a material that won't mark the rolls.

Hard facing is often the answer: It resists galling, abrasion, and corrosion.

Prior to hard facing, the mill used unprotected steel guides. After two or three weeks, the parts would be worn beyond the limit of acceptable operating efficiency. They were removed, reclaimed, and replaced. Maintenance men cut off the worn end and welded on a new steel section, which had to be machined.

Tries Other Way—Hard-faced mild steel guides last from six to nine weeks between reclaiming operations. When they're worn, a $\frac{1}{8}$-in. overlay of Colmonoy No. 6 (Wall-Colmonoy Corp., Detroit) is put on with a $\frac{1}{4}$-in. rod and an oxyacetylene torch. (The alloy is a nickel-base material containing chromium borides.)

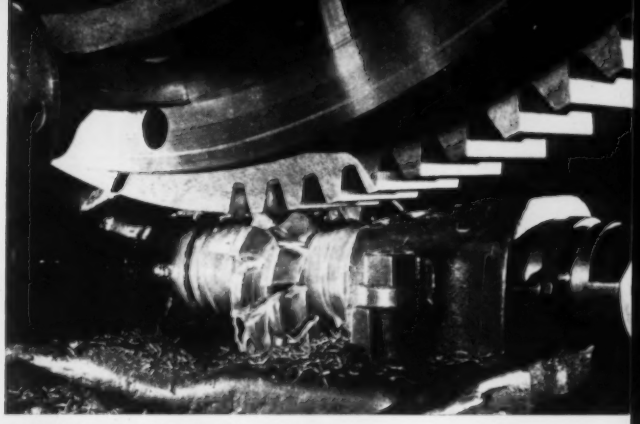
Maintaining the proper shape and size of the wearing edge is simple. It can be done on the spot in one-third the time formerly required. Most important point: Mill downtime is substantially reduced.

Suggestions—Success depends on knowing the kind of service and the conditions the part will operate under. Surfacing materials and application techniques are made to fit one or a combination of three conditions: Abrasion, impact, and corrosion.

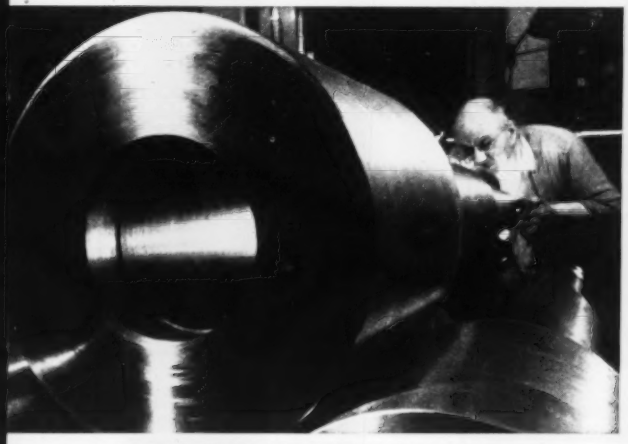
The kind of metal you're covering is important since the part gets quite hot during surfacing operations. Proper heat treatment must often be considered during or after welding.

ALCO FORGINGS

SAVES $150 PER GEAR—In cutting a double-web design fabricated gear on a gear generator, tool cost formerly averaged $180 per gear. By switching to ALCO Hi-Qua-Led Steel with its lower friction component, tool wear is reduced, and manufacturer reports savings of approximately $150 per gear.



8-HOUR JOB DONE IN 3—Another manufacturer reports that roughing and finishing a gear required a total of 8 hours and 8 minutes on his gear cutter. With freer-machining Hi-Qua-Led Steel and the increased speeds and feeds it permits, the job is now completed in just 3 hours and 10 minutes.



700% INCREASE IN TOOL LIFE—In trepanning a 4 in. diameter hole 42½ in. long with a Warner & Swasey lathe, tool life averaged one piece per tool. With Hi-Qua-Led, 8 pieces are now obtained with the same tool. Manufacturer reports that Hi-Qua-Led Steel also provides much better chip formation.

TOOL DOES 3 TIMES THE WORK—With Hi-Qua-Led Steel, a King boring mill operation that once required 3.4 hours is off the machine in 43 minutes. Through the lower frictional properties of Hi-Qua-Led Steel, the manufacturer obtains 10 pieces per tool grind as compared to 3 pieces obtainable with non-leaded steel.

HOW ALCO'S EASY-MACHINING HI-QUA-LED STEEL* FORGINGS CAN CUT YOUR PRODUCTION COSTS

The easy machinability of ALCO's Hi-Qua-Led Steel® forgings is setting new production records throughout industry. In case after case, a switch to Hi-Qua-Led Steel forgings has resulted in greatly reduced machine time, longer tool life and improved surface finish with closer tolerances.

These unique cost-cutting benefits are provided by Hi-Qua-Led Steel forgings with all the other physical characteristics of regular steel in the same AISI grade. You get the same service in your end product.

ALCO specialists will be happy to demonstrate these profit-boosting characteristics on your own machines, in your own plant. Forgings are available in seamless rolled circular shapes from 18 to 145 in. OD, in open-die shapes from 1,000 to 30,000 lb and 40 ft long, and in mandrelled seamless circular shapes up to 60 in. wide.

For a technical booklet on Hi-Qua-Led Steel forgings, write ALCO Products, Inc., Dept. 155, Schenectady 5, N. Y.

***HI-QUA-LED STEEL**—ALCO's registered trademark for its special process leaded steel forgings that are making outstanding reductions in machining time, tool wear and production costs.

ALCO

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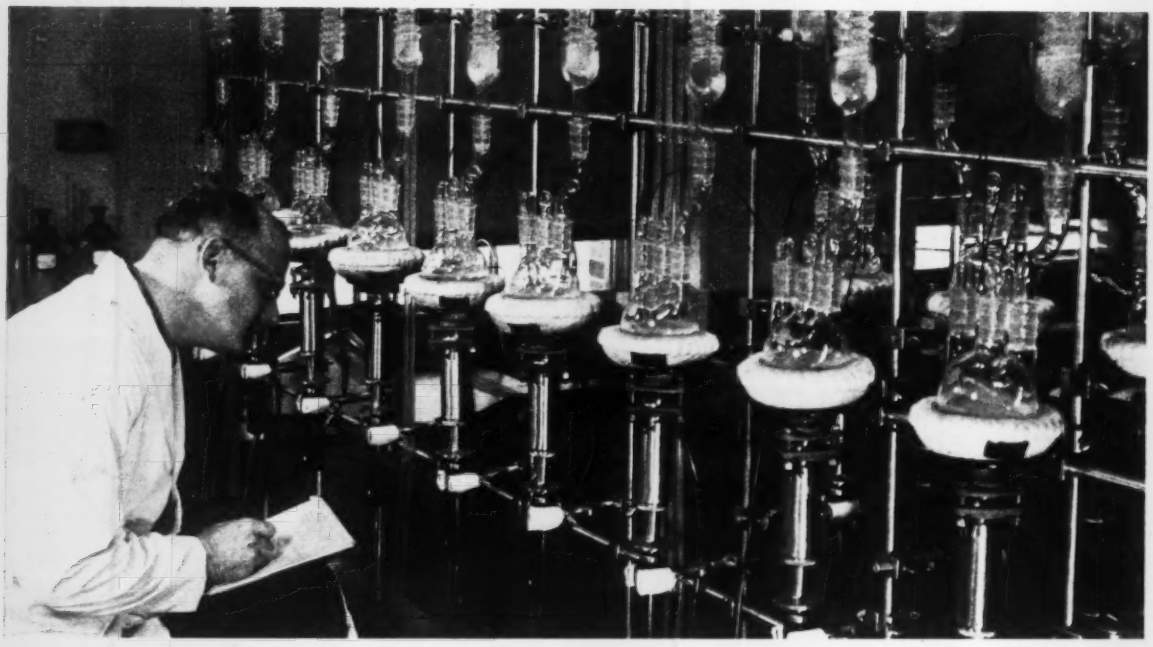


This apparatus enables Carpenter to predetermine the corrosion rate on heat transfer equipment more accurately than previously used equipment

New Tools Aid Corrosion Research

Carpenter Steel Co.'s new laboratory contains some unique equipment. It will be used to accurately determine corrosion rates of metals and to develop new alloys

CARPENTER Steel Co.'s new corrosion laboratory at Reading, Pa., reflects the company's keen interest in materials for the atomic energy, missile, and aircraft industries.

Its purpose is twofold: 1. To develop corrosion facts on metals so that users can make the right selection. 2. To do studies that will speed the development of new corrosion resistant alloys and improve present ones.

Equipment Is Exceptional—Carpenter says its laboratory facilities put it high among specialty steel producers in this increasingly important area. (Some large steel companies also have fine corrosion laboratories.)

The company has some unusual equipment, including two sets of apparatus which are unique Carpenter developments. One is a heat transfer tester which simulates the relationship between the metal walls of a heat exchanger and the corrosive medium. It eliminates edge effects since the metal edges of a heat exchanger are rarely exposed.

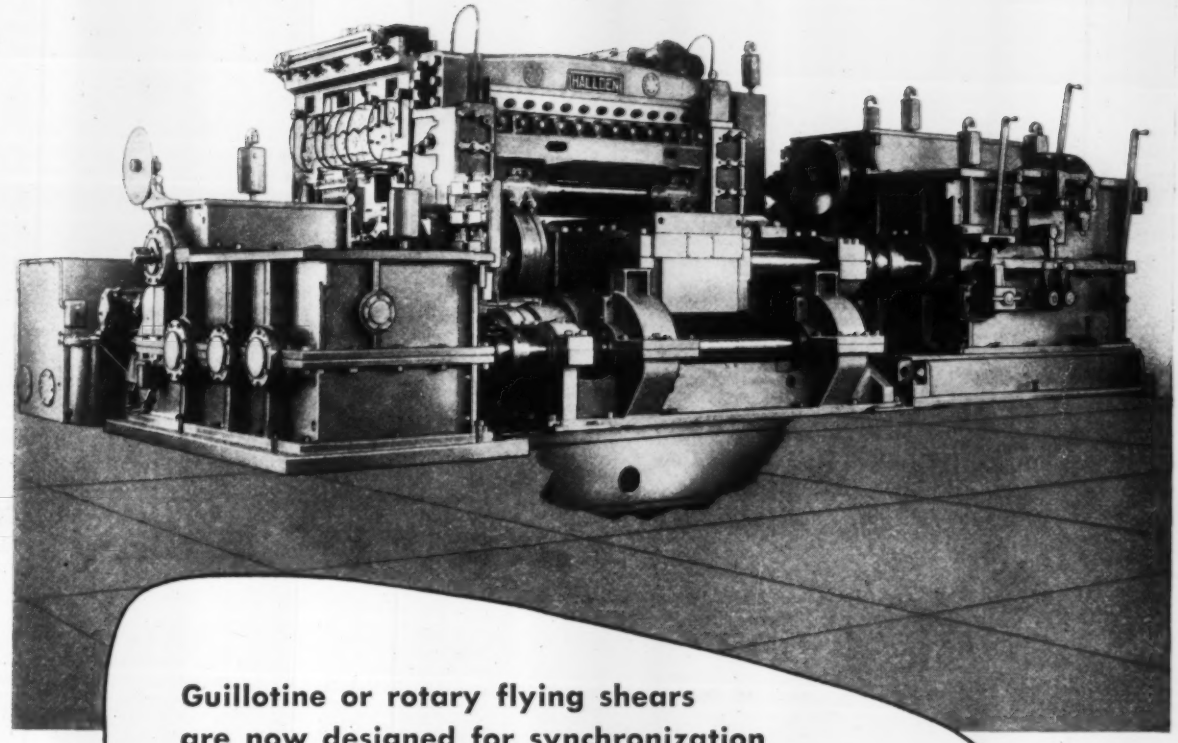
Another is a multisample tester for the standard ASTM boiling nitric acid test. It allows the simultaneous exposure of up to 36 samples (standard apparatus takes one sample at a time). Savings in time, space, and acid have chopped the cost of doing the test to 10 per cent of the conventional method.

Tests Are Practical — Carpenter can compare alloys under most process conditions. The laboratory is equipped to work from room temperature to 1000° F and from one-half atmosphere to 200 psi pressure with suitable controls to maintain constant exposure conditions. A Corrosometer makes it possible to determine corrosion rates in a few hours instead of weeks.

Findings of the laboratory will be especially important in predicting the behavior of alloys for heat exchangers in atomic energy equipment. In this equipment, virtually no failures are permissible.

Considerable work will also be done on stress corrosion cracking in high temperature alloys. Research will be aimed at finding out more about the mechanism of such cracking and at the development of new alloys with more resistance to stress corrosion attack.

SYNCHRONIZED *"On the Fly"*



Guillotine or rotary flying shears are now designed for synchronization adjustment without stopping the machine.

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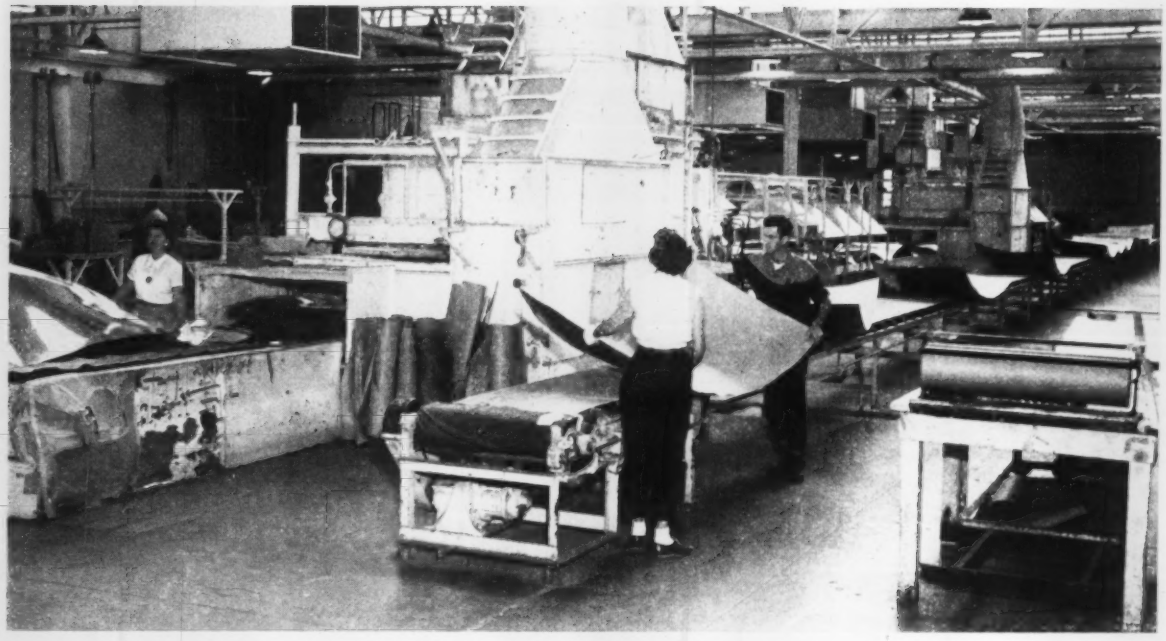


Large titanium sheets are protected with water glass coatings during heat treatment at Boeing Airplane Co.

Water Glass Solves Heat Treat Problem

Coated on reactive metals like titanium and zirconium, it prevents embrittlement and scaling at high temperatures. It can be dissolved in a caustic soda solution

WATER-SOLUBLE forms of glass have solved a costly problem in heat treating titanium and zirconium alloys: They prevent embrittlement and scaling at the high temperatures necessary to develop maximum strength.

The ceramic is sprayed on the sheets before heat treating. It dries rapidly in open air and requires no further processing. It prevents oxidation of the supermetals at the up-to-2000° F heat treating temperatures.

Several Coatings Tried — The process was developed by research engineers at Boeing Airplane Co., Seattle. Several coatings were tried before water glass was adopted.

Initially, the researchers got encouraging results with a silicone paint containing aluminum powder. Titanium sheets were given four spray coats, allowed to dry 24 hours at room temperature, then baked for 4 to 6 hours at 1200° F.

The coating prevented oxidation during heat treatment. But after the materials were quenched, the coatings had to be removed with an alkaline softener and hydrofluoric acid pickling solution.

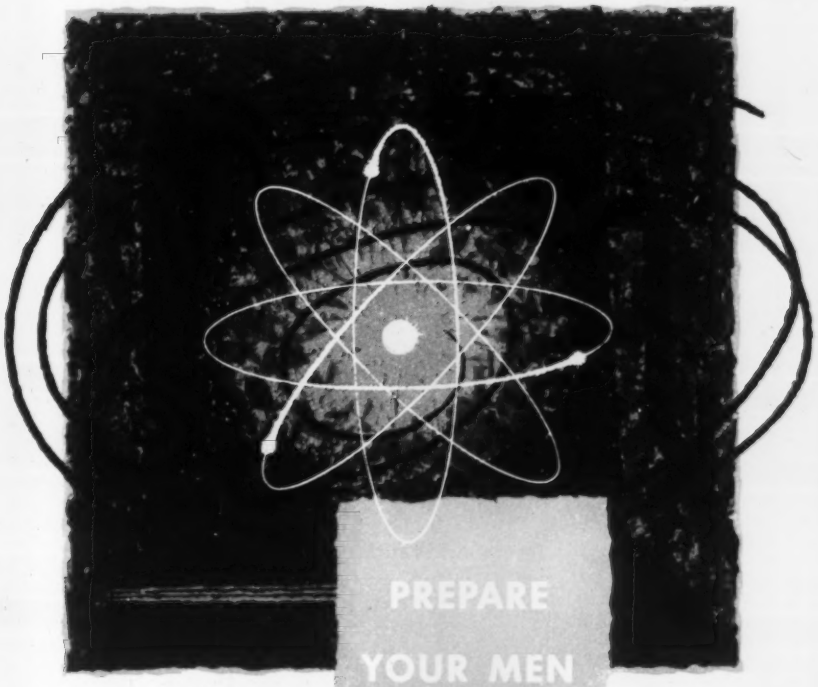
Because residual coating materials often resisted the chemicals, metal surfaces were sometimes badly etched. Also, it was necessary to replace protective finishes which were scratched or damaged before heat treatment because repair was impractical.

Porcelain Enamels Too Good— Experiments were made with porcelain enamel coatings that had thermal expansion coefficients far different from those of the metals to be heat treated. The idea was to get a protective coating that would spontaneously spall or pop off the metal surfaces when they were water quenched after heating.

About 200 enamels were tested, but they were all too adherent.

Water Glasses Tested — Water soluble forms of glass (soluble silicates of sodium) are readily available—they're used extensively in the manufacture of detergents, protective coatings, adhesives, and high-octane gasoline.

Boeing engineers tested 120 mixtures of water glass, low-temperature binders, suspending agents, and coating vehicles to find one with the right properties—easy application and removal characteristics and



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A vast new era of technological progress in steelmaking will be revealed by more than 200 companies in exhibits and demonstrations in the 1958 Iron & Steel Exposition. Steel plant engineers and supervisory personnel will find new ideas and "know-how" to keep pace with latest scientific developments in the *four full days* of technical sessions and exhibits . . . all in one trip!

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YOU'VE RELIED UPON THIS MARK FOR *QUALITY*...

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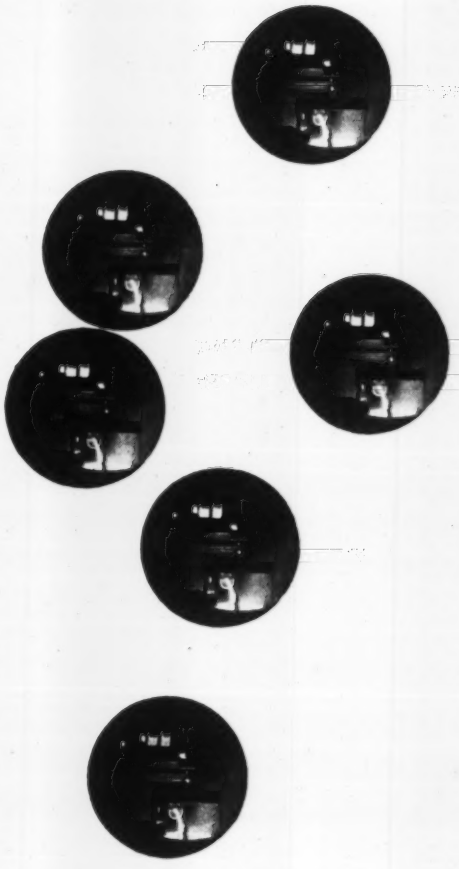


Here's how Carpenter's *doubled capacity* will help you keep steel inventories at *realistic levels* and cash tie-ups *at a minimum*, through both high and low demand periods:

You know the cost of excessive inventories. You tie up cash precisely when you need it most. Large inventories cost much more to carry than the inventory you actually need for current production.

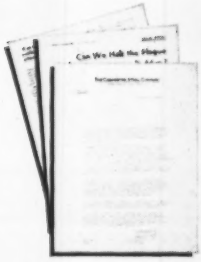
Now . . . through Carpenter's acquisition of electric furnace steelmaking facilities in New England (which *doubles* our ingot capacity) we've approached this problem from *your* side of the fence.

Today, you're doing business with a company *twice* as big as it was a year ago. This permits us to provide a plan by which customers can *reserve mill output ahead* of time . . . eliminating the need to protect yourself by ordering far ahead . . . eliminating the necessity for placing excessively large orders in periods of peak demand.

And if you order steel out of local warehouse stocks, this same plan assures continuous, dependable deliveries.

Now, and when steel demand is again on the upswing, we are putting steel "in the bank" for you. We are carrying extra large stocks of semi-finished steel in reserve . . . enough to take care of emergencies for all customers subscribing to the plan. Moreover, we can offer this plan to *more* steel users than ever before!

Today, while we're implementing this new service, is the time to go along with us. By acting now, you assure yourself of a steady supply of Carpenter top quality Tool, Stainless and Alloy steels right through the next period of peak demand.



WRITE TODAY FOR "Can We Halt the Plague of Periodic Inventory Buildup?" Recently released, this special report gives you full details on how Carpenter's plan can help you keep inventory costs at a minimum!

The Carpenter Steel Company, Main Office and Mills, Reading, Pa.

Alloy Tube Division, Union, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.
Webb Wire Division, New Brunswick, N. J.

WATER GLASS . . .

the ability to protect metals at high temperatures.

The mixture chosen is prepared by adding powdered sodium silicate to a solvent-dispersed resin or binding medium. It can be sprayed like lacquer, dries rapidly in air, and requires no supplemental processing.

As a rule, three spray coatings will protect metal parts against oxidation. If a protected part should be scratched before it is heated, the finish can be easily repaired.

If necessary, metals can be heat treated in less than an hour after the fast-drying dispersion is applied.

Above 300° F, opaque white constituents of the finish are burned or vaporized by heat, leaving sodium silicate powder to fuse and protect the metal. When removed from a heat treat furnace, the metals are covered by transparent water glass alone.

Despite its name, the finish cannot be satisfactorily removed with water. It can be quickly dissolved in a caustic soda solution which has no detectable tendency to etch the surfaces of most structural metals.

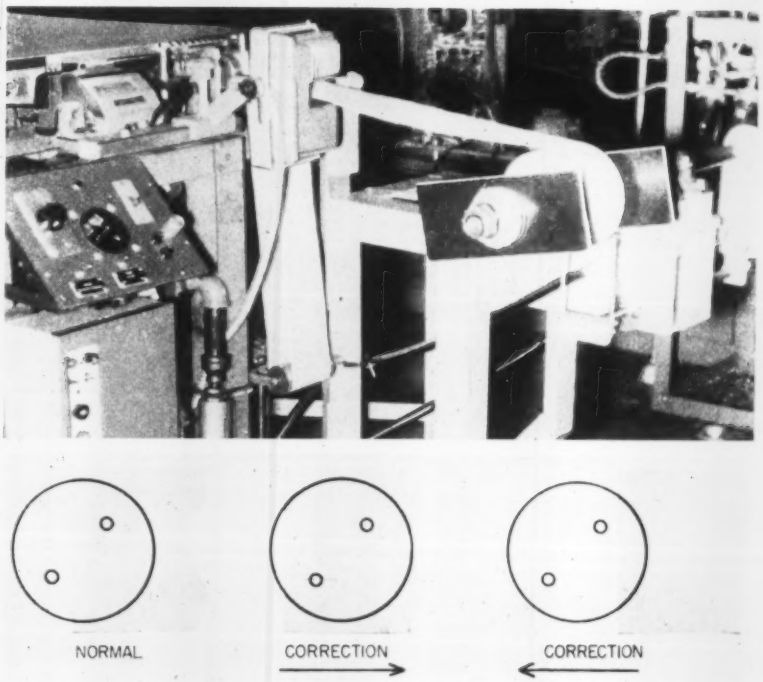
Drill Saves Time

Drilling time for a special high speed alloy was reduced from 105 minutes to 1 minute 20 seconds by switching to a heavy duty power drill. The unit is produced by Drillmation Corp., Center Line, Mich.

A standard carbide tipped drill and ordinary soluble oil coolant were used to drill a ¾-in. hole in a 1-in. slab. The metal had a hardness of 56-58 Rockwell C and a tensile strength of 310,000 psi.

Accuracy Assured — The power unit gives a constant rate of feed—it can start at 0.0002 in. per revolution and be adjusted by infinitesimal intervals up to 0.0008 in.; acceleration can be up to 0.025 in. per revolution. Microdepth control will repeat to an accuracy of ±0.0005 in.

Other features include an indicator light that warns the operator that the drill is dull and a pump that provides hydraulic pressure directly behind the center line of the drill and spindle. The pressure can be adjusted up to 5000 psi.



The sensing head transmits signals to control box (lower left). Two photoelectric cells (lower diagram) detect out-of-position movements

Control Reduces Trim Waste

This device monitors the strip edge in a slitter used in producing tantalum foil for small roll capacitors. It operates on a photoelectric principle. Firm saves $30,000 a year

ACCURATE CONTROL of an edge slitter for tantalum foil has reduced trim waste and saved $30,000 yearly for a manufacturer of capacitors. Control to 0.005 in. is assured by the device (Edgetron) which is manufactured by Intercontinental Dynamics Corp., Englewood, N. J.

The controllers are photoelectrically actuated. Two circuits detect lateral changes in the foil flowing through the sensing throat. One of the light beams is normally interrupted; displacement of the moving metal interrupts both beams, or exposes both. The control span is varied by rotating the beam plates to change the distance between the two beams.

Positioning Rolls—Control signals are fed to a fast acting electric solenoid control valve. It regulates the pressure on the work cylinder, which in turn positions the unwind roll of the foil slitter. The unwind roll is positioned by a hydraulically actuated cylinder.

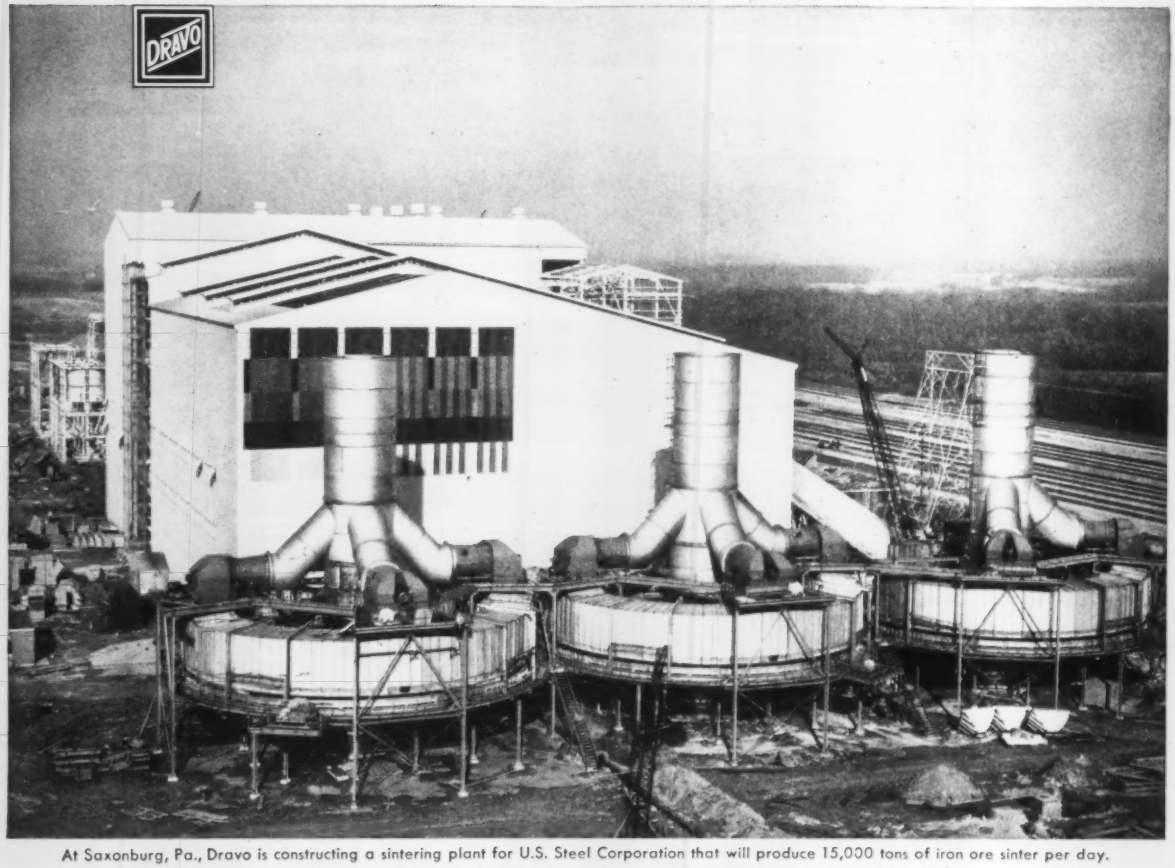
Sensing with light prevents distortion of the foil which could be caused by contact of mechanical sensing elements. The production rate has increased more than 15 per cent since the controllers have been in operation; and downtime has been low.

There is no substitute for stainless steel
in automobiles

No other material is as bright, strong and resistant to rust and wear as Stainless Steel. It gives every car the clean, exciting beauty that sells in the showroom and re-sells on the used car lot. Look for *Stainless Steel* on your new automobile.

Specify McLouth high quality sheet and strip Stainless Steel. McLouth Steel Corporation, Detroit 17, Michigan.

McLOUTH STAINLESS STEEL



At Saxonburg, Pa., Dravo is constructing a sintering plant for U.S. Steel Corporation that will produce 15,000 tons of iron ore sinter per day.

Dravo builds country's largest sintering plants for U. S. Steel

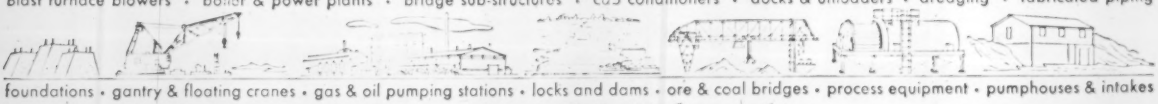
To increase efficiency of blast furnace operations by better utilization of iron ore fines, United States Steel Corporation is building two giant sintering plants—one at Gary Steel Works, Gary, Indiana; the other at Saxonburg, Pa., north of Pittsburgh, to be operated by Edgar Thomson Works.

As exclusive U.S. licensee of the Lurgi Company (Europe's foremost producer of such equipment) Dravo is handling design—and fabrication and erection of mechanical equipment—for both installations. Each includes three sintering machines and three coolers. American Bridge Division of U.S. Steel is handling fabrication and erection of the buildings.

The U.S. Steel and other sintering projects currently under contract at Dravo underscore the growing importance of this process to the steel industry. For information on products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PA.

DRAVO
CORPORATION

Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping



foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

Thread Inserts Cut Costs

An outdoor lighting fixture is 73 cents cheaper, thanks to stainless wire thread inserts. They replace four bushings permanently locked with pins.

Product — Crouse-Hinds Co., Syracuse, N. Y., makes the lighting fixture. Its housing must be light, weather resistant, and dusttight.

As first designed, the cover screws were held by four bushings with internal and external threads. The bushings were threaded into the aluminum housing to provide better holding power and wear resistance for cover screws. Precise installation was slow.

Little design change was needed to switch to the thread inserts. Made by Heli-Coil Corp., a division of Topp Industries, Danbury, Conn., they are screwed into four drilled and tapped holes with an inserting tool. The coil end is kept about one thread below the surface of the housing. The result: A smooth, hard thread for the screws which secure the gasketed cover.

Thread inserts provide high loading strength, and the physical properties of the 18-8 stainless wire is said to eliminate thread wear in use. The stainless also cuts corrosion, galling, and seizures.

The lighting fixture throws a wide horizontal and a narrow vertical beam to light roadways and walks.

Electrical Strip Is New

A new electrical steel for missiles, aircraft, and special industry uses is available from Allegheny Ludlum Steel Corp., Pittsburgh.

Called 0.004-in. Silectron Special Grade strip, the material is designed for high frequency applications where high permeability and low exciting current are essential to high inductions. By using Special Grade, transformer manufacturers can reduce the size and weight of equipment without sacrificing electrical performance, states Allegheny Ludlum.

The new steel is a C-10 coated, cold rolled, oriented strip with best magnetic properties parallel to the rolling direction. After fabrication, the material is given a stress relief anneal in a nonoxidizing, noncarburizing gas atmosphere.

Sleds cradle the tubing for a trip through the annealing cycle

Alloy Lengthens Fixture Life

Hastelloy X used in sleds for annealing furnaces is subjected to temperatures as high as 2250° F. It's still in good shape after 16 months of service, despite thermal shock

USE of Hastelloy X has tripled the life of "sleds" that carry tubes through a furnace annealing cycle at Tube Methods Inc., Bridgeport, Pa.

The sleds are fabricated from 5/16-in. bar stock. Loops form a cradle to hold the tubing so it never touches any part of the retort during its trip.

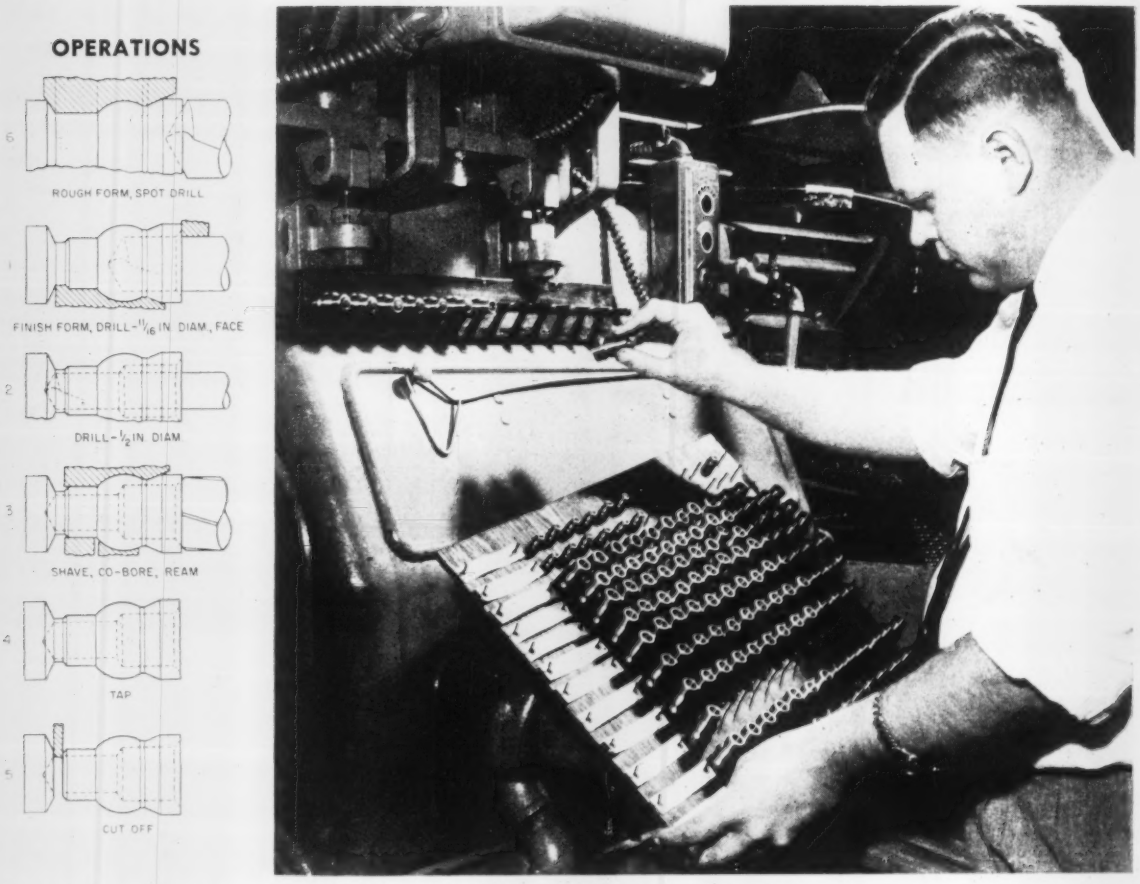
Couplers made of ¼-in. flat plates are welded to the ends of 12-ft bars. The couplers hook to each other to form a continuous mechanical feed.

Withstand High Heat—The furnace atmosphere is hydrogen. The temperature is held above 1700° F and may go as high as 2250° F.

Tubes remain wired to the cradle during the entire annealing process. Cooling is done inside a water jacketed, hydrogen filled chamber.

The alloy is subject to thermal shock, but after 16 months in service, it is considered to be in excellent condition.

Previously, the carriers became brittle and broke after six months. Increased life has lowered the cost of replacement and reduced fabricating time.



Engineer holds a checking board full of machined samples. It takes 11 cuts to check out one piece. Raw material is 1 in. steel round. Equipment: Multiple spindle automatic

How Steel Firm Checks Machinability

Automatic turning machines shape thousands of steel samples to determine best feeds, speeds, and tool settings. Results of tests are available in handbook

THOUSANDS of odd-shaped pieces cut from cold drawn steel bars aid machinability tests at the research laboratory of Union Drawn Steel Div., Republic Steel Corp., Massillon, Ohio. The purpose: They yield data that the company recommends to operators of automatic screw machines to improve their practices.

Need Data—Information like the rates of speed and feed for various grades of steel, what tools to use, and surface finishes to expect is essential to efficient operation. Machining cost can exceed by many times the cost of the metal in the part itself.

James D. Armour, chief metallurgist for the division, developed the laboratory procedure. His aim is to duplicate machine shop conditions as closely as possible. The lab has a test production line that includes single and multiple spindle automatic machines.

Compare Cuts and Grades—The contoured shape of the pieces lets the researchers compare results of 11 common machining cuts used in production shops.

Long term tests are also made—1 to 3 tons of a grade of steel may be used up before sufficient data are compiled.

As many as 12,000 pieces are cut from steel bars during an 80-hour test.

To date, some 400 popular grades of standard and special compositions have been rated by the lab. Results are published in a handbook distributed by Republic.

Like the production operators, the engineers running machinability tests are interested in three factors affecting finished parts: Production rate, tool life, and surface condition. They can vary any of the factors by adjusting machine speed, advancing or retarding feed, or making tool changes.

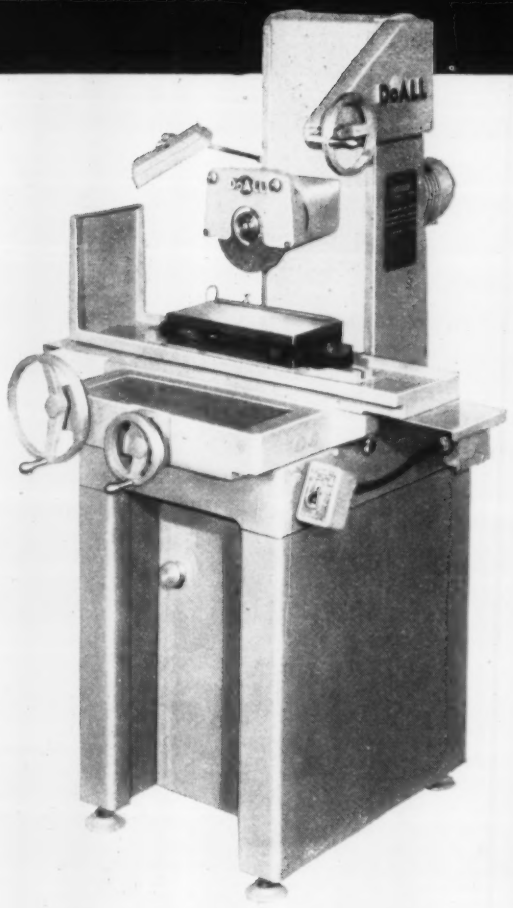
Results tell an operator how he can come closest to the ideal.

DoALL Announces . . .

a NEW Super Precision Hand-Operated SURFACE GRINDER

Joining the Family of Fine Do-All Precision Surface Grinders

MODEL DH-612



Tailored to Fit the Operator for Easier, More Productive Work

- **NEW-DESIGN VERTICAL FEED HANDWHEEL** in easy-to-reach, safe position
- **ADJUSTABLE MACHINE OPERATING HEIGHT**
- **SMOOTH TABLE ACTION**—manual traverse through timing belt drive (hydraulic drive optional)
- **RIGHT- or LEFT-HAND TABLE DRIVE**—handwheel position instantly interchangeable
- **VERTICAL HANDWHEEL** graduated in tenths (Zero Slip Rings optional)
- **SADDLE LOCK** for form and plunge grinding
- **1 H.P. MOTORIZED SUPER PRECISION SPINDLE** with anti-friction bearings
- **KNEE-RECESSED** cabinet base

"Human Engineering" guided DoALL engineers in the design of this new surface grinder. Low in cost yet superior in accuracy, it is manufactured to set completely new performance standards in a hand-operated surface grinder.

Every design feature and control function was carefully considered for the operator's convenience. Now the most exacting work may be turned out with least operator fatigue. With tolerances closer than ever before, this assures users of the Model DH-612 a definite competitive advantage.

Standard machine includes not only the exclusive features above, but also telescoping dust guards and one-shot lubrication system to table, saddle, column ways, elevating screw, gears and bearings. A full range of optional accessories is available including "Cool Grinding" through-the-wheel mist coolant system. Table travel is 7″ x 13″; work height, 0 to 12¾″; vertical feed to .0001″ and crossfeed with vernier to .0002″.

In ease of operation, accuracy, power and completeness, there is no finer grinder. Full details are at your DoALL Store—or write . . .

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THE DoALL COMPANY, Des Plaines, Illinois

GR-26

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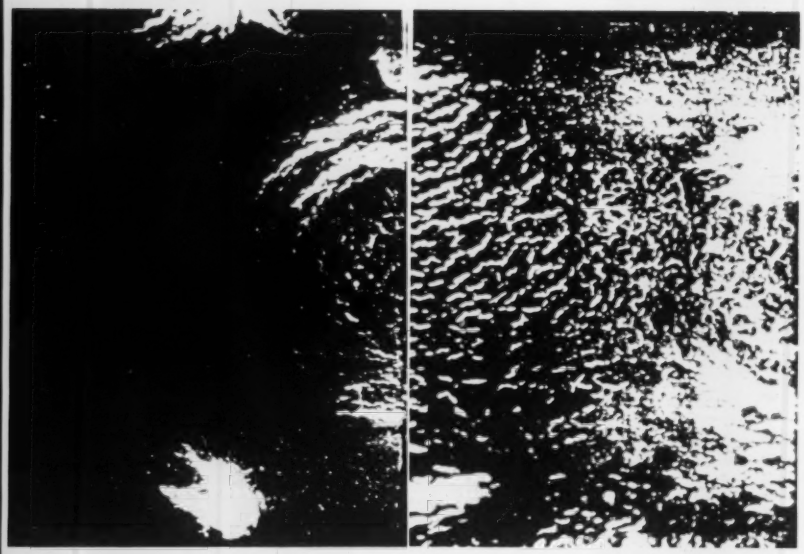
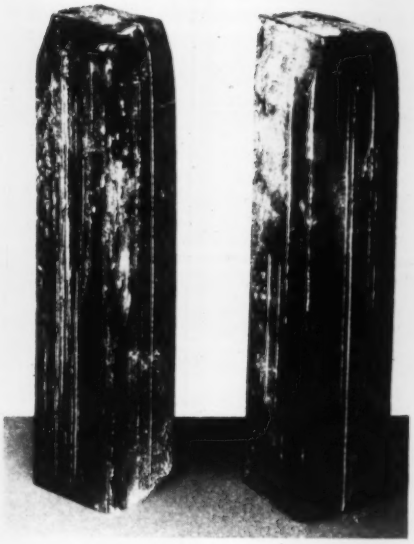




The newer postemulsification penetrants are far more brilliant than their old counterparts (left) which were self-emulsifying. New type points up fine defects more clearly

Source: Magnaflux Corp.

PROGRESS REPORT:

Nondestructive Testing

ENGINEERS and scientists, increasingly aware of the importance of fine defects, call nondestructive testing "the key to perfect materials and assemblies."

No wonder. New instruments check such things as hardness, thickness of films and cladding, metal composition, direction and degree of grain orientation, yield strength, damping factors, and conductivity. Some scan automatically and mark defects.

Six basic approaches are used: 1. Resonance. 2. Pulse-reflection ultrasonics. 3. Eddy current instruments. 4. Radiography. 5. Penetrants. 6. Magnetic particles.

Resonance Types—These instruments get the most interest from those who measure thin plates. The method handles thicknesses of 0.010 to 4 in. It will also find laminations, gross internal voids, lack of bonds in brazed or clad materials, and variations of wall thickness.

Older instruments were large and heavy, and had several transducers dangling from them. Today's versions are much simpler and use plug-in crystals and transducers: A 17-lb portable checks thicknesses up to 4 in. on a direct-reading scale.

Pulse Reflection—These instruments have undergone even greater changes. Today's small unit is comparatively simple and easy to operate. The "B-scan" presentation and immersion techniques, plus rapid scanning, make pulse reflection application exceptionally broad. The method is indispensable, say experts, in inspecting large forgings and extrusions used in airframes.

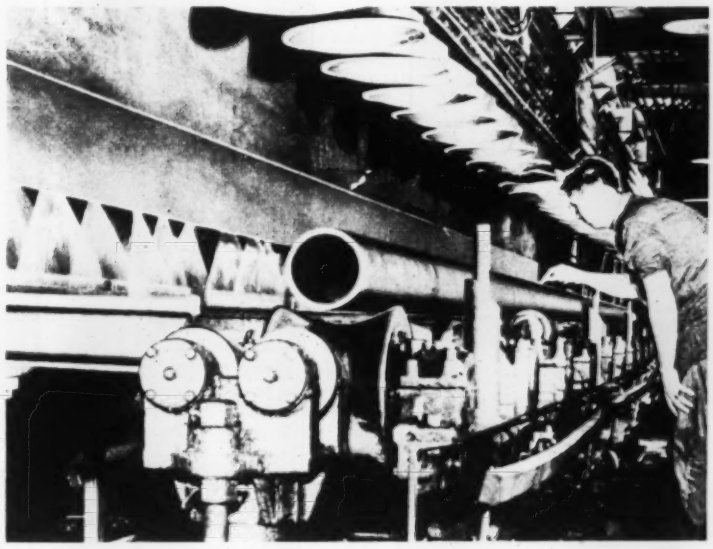
Other techniques use angle crystals for generating shear waves (in weld inspection) and surface waves which follow contours.

The latest crystals — barium titanate and lithium sulfate—are easier to make and give greater resolution than quartz crystals.

Eddy Current—These tests locate flaws and check the physical properties of many metals, alloys, and assemblies. They use the variations in a coil placed around or near a metal. (The coil is impressed with various alternating currents.)

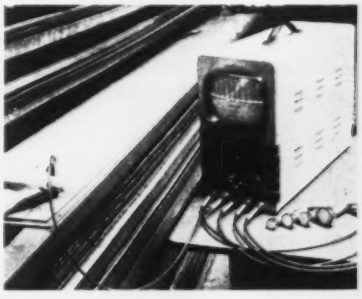
One device measures conductivity within 1 per cent without any specially machined test specimens. A probe test coil sits on the metal and registers conductivity on a dial calibrated in International Annealed Copper Standard units. The device also checks variations of composition, heat treatment, or cold work. (Only one can be out of control.) Aluminum alloy 2024 can be checked for hardness within 4 points, Rockwell B. The test can be made before or after the metal part is installed. Example: (Fire damaged airplane parts are checked for safety.)

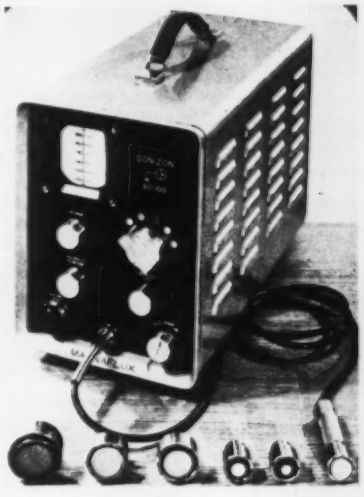
Similar instruments check film



Fluorescent magnetic particles are popular with seamless tubemakers. Billets (opposite page) show flaws before processing; inspector scans tubing under black light (left); cracked seam in a quenched and drawn drill casing shows up clearly (above)

Metalworking progress depends heavily on quality measurements. Everything from penetrants to eddy currents are contributing with better, simpler instruments





First resonance testers were fairly heavy, and had several probes like the one at the top. Magnaflux' latest version (below) is smaller, lighter, and has plug-in units for several materials

thicknesses of cladding metals.

There is also a device for finding flaws in wire, rods, and tubing. The material passes through a coil while flaws show up on a cathode ray screen. The signal will operate lights, marking devices, or gates for automatic sorting. An important feature: It can indicate two variables at once.

The same principle is used to check a wide variety of parts for composition and hardness. Examples are bolts, bearing balls, races, and tools.

Some testers detect the direction and degree of grain orientation (like transformer core material). Others accurately measure yield point and damping capacity of any material (it can be done at elevated temperatures) and accurately measure the coercive force of a metal.

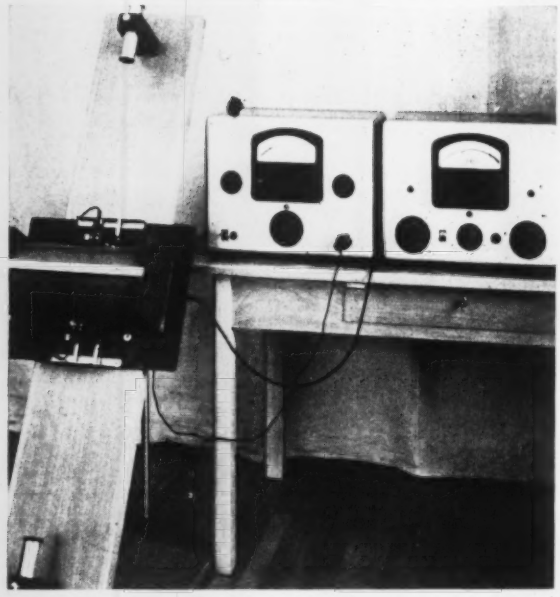
Radiography — Many important developments, says C. E. Betz, assistant chairman, Magnaflux Corp., Chicago, are based on artificially produced radioisotopes. The most common sources are cobalt 60 and iridium 90—others, such as thulium 170, are being evaluated.

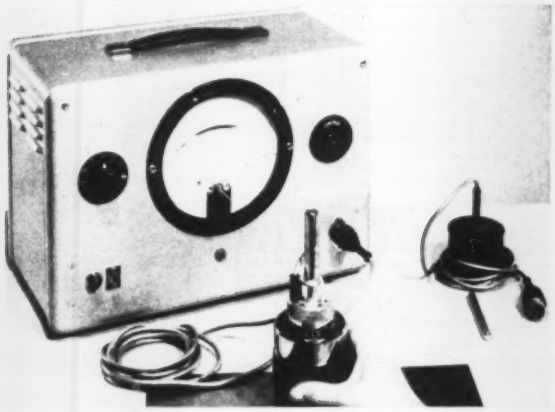
In x-ray work, efficient electrostatic generators made possible the highly portable unit for field inspection. Image intensification also put fluoroscopy in business.

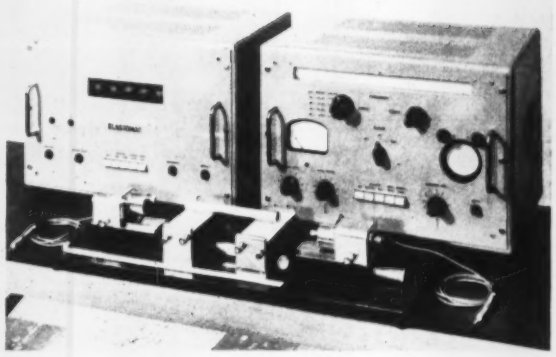
Penetrants, Particles—Old timers, like penetrants and magnetic particles have been improved. In fluorescent penetrants, the emphasis is on materials and techniques to increase sensitivity for exceptionally fine, tight cracks, and comparatively wide, shallow defects like nicks, scratches, and die marks.

Sensitivity is closely tied to seeability. The brilliance of several new penetrants surpasses that of the original (and still widely used) formula by more than 300 per cent. The advance comes from discoveries in dyes and formulation techniques.

Postemulsification also extends







Eddy current principle gets a big play from researchers. Examples: (top right) Magnaflux Texturometer checks grain structure; device at right evaluates yield point and damping capacity; precision field meter (above) determines how well a material produces magnetic field

the visibility range of defects. It uses a brilliant penetrant with no emulsifier—at first. Emulsifier is applied after the dye, left for a brief period, then washed with water. The secret: Limited time of contact between emulsifier and penetrant reveals more small and shallow cracks.

Developments in chemistry are broadened by stronger light sources which increase the brilliance of fluorescent materials. An important prop is a simple measurement of black light intensity.

Another outgrowth of such developments is the means of evaluating and comparing brightness and defect-finding ability. Instruments like the Coleman Photo-fluorometer measure brightness quantitatively. Crack-finding ability is determined by comparing test specimens with artifical cracks.

The potential of magnetic particles lies in automatic and semiautomatic applications, magnetic-fluorescent particles, and a few unexplored fields.

Water vehicles are a comparatively recent development. Their main attraction: Freedom from fire hazard. They can't be used in older equipment made for oil bases, but water-types work well in machines designed for such service. Main problems that had to be overcome were corrosion, electrolysis, and equipment deterioration.

Fluorescents in either oil or water suspensions show great promise. They are more brilliant and stable than their counterpart bonded to magnetic particles. They are packed dry—a simpler way to ship and to prepare baths.

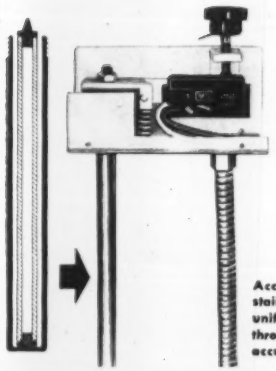
A recent application is the inspection of billets before scalping or scarfing. Stock is magnetized circularly in a large version of the head-type bench unit. After covering with a water suspension of fluorescent particles, areas which show seams or cracks are scarfed. That operation can be checked with a portable applicator—there is usually enough residual field in the billet.

Other Methods—Honeycomb structures created a need for a new inspection method. Many approaches were tried—sonic vibration, radiographics, and heat. Heat proved best. One method, called Bondcheck, is quite accurate, although limited to metal structures bonded with metals.

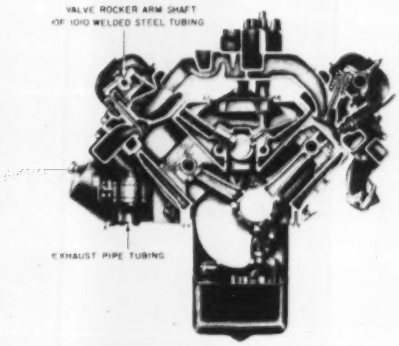
What Makers Want—Where are the most promising avenues for growth? Here is the opinion of Magnaflux's Mr. Betz: 1. Sensitivity. 2. Speed. 3. Dependability. 4. Reproducibility. 5. Elimination of the human factor. 6. Standards.

Greater sensitivity will increase the probability of finding all flaws the first time. With greater speed must come equivalent accuracy. Machinery and controls become more complex and operators can make mistakes. To get speed and dependability, new equipment reduces or eliminates adjustments by the operator.

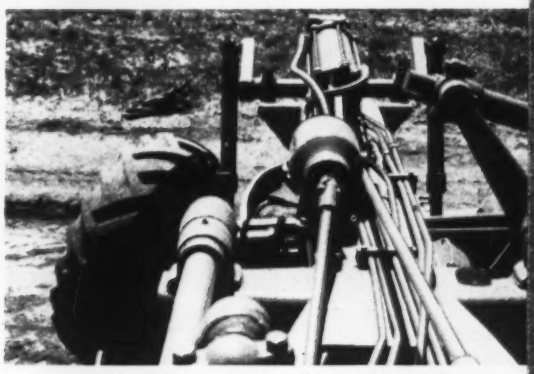
Most important of all are standards of acceptance which do not require judgment.



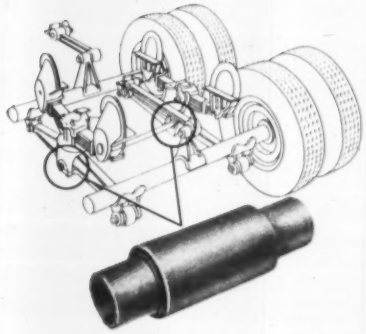
Accurately telescoped welded stainless steel tubing assures uniform temperature gaging through positive dimensional accuracy.



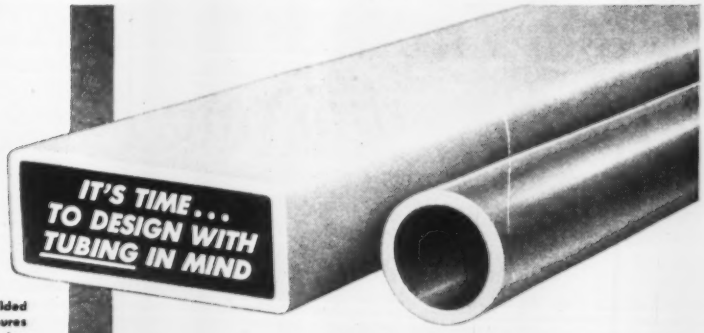
Mechanical parts such as hollow shafts or complex exhaust systems are served equally well by *welded* steel tubing.



Structural, hydraulic and mechanical applications for welded steel tubing show clearly in this roadbuilding equipment.



Dimensional accuracy of welded steel tubing makes this bushing economical, eliminates machining.



WHERE MECHANICAL EFFICIENCY MUST BE SERVED

Use WELDED TUBING

Carbon • Alloy • Stainless Steel

Only *welded* tubing combines the advantages of a tube's hollow form and structural strength with exceptional mechanical efficiency resulting from uniform wall thickness, concentricity, accurate dimensions and general adaptability to fabrication of all kinds.

Welded tubing is available from your quality tube producers in all weldable grades of steel in a full range of sizes.

It's time to design with *welded* tubing in mind!

COMPLIMENTARY TECHNICAL HANDBOOK

260 fact-packed pages of design data for Welded Steel Tubing. For your copy write on your company letterhead and give your title.

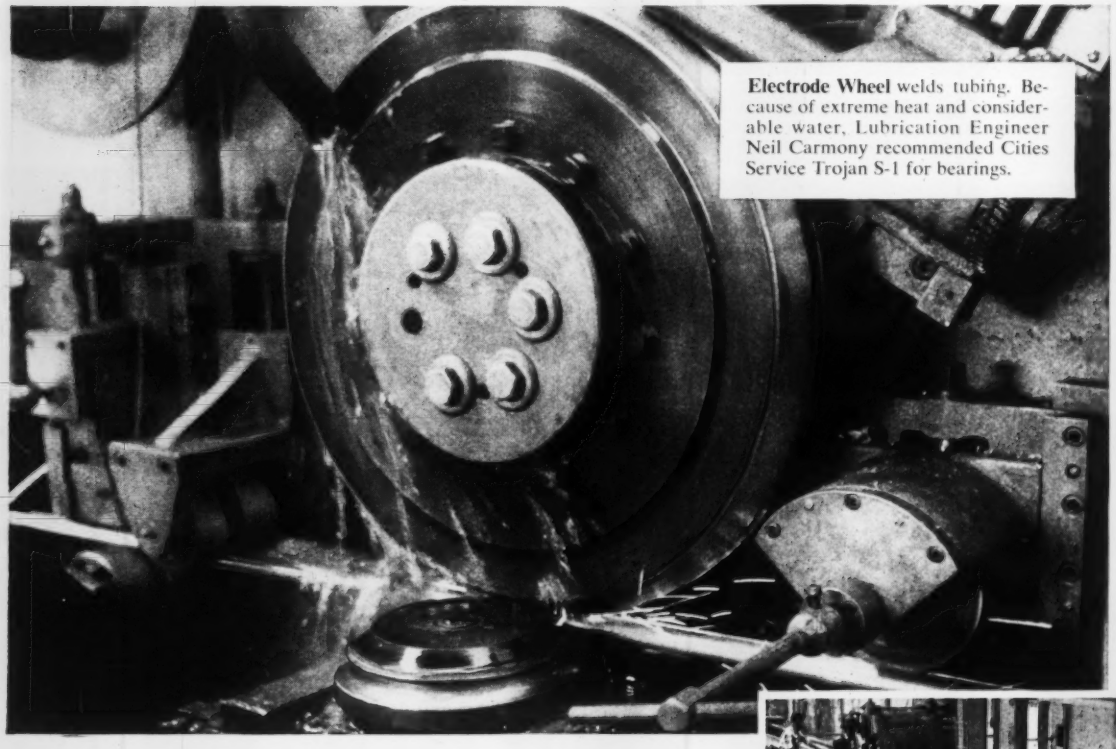
FORMED STEEL TUBE INSTITUTE

850 HANNA BUILDING
CLEVELAND, OHIO

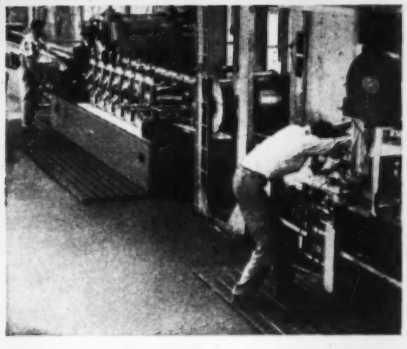
An Association of Quality Tube Producers

LC-583

New Tubing Mill Produces at Speed of 350 Feet Per Minute!



Electrode Wheel welds tubing. Because of extreme heat and considerable water, Lubrication Engineer Neil Carmony recommended Cities Service Trojan S-1 for bearings.



It's Cities Service for Hydraulic System and all lubrication

On January 1, 1957, P&H Tube Corporation put a new mill in production at Bossier City, Louisiana—the only one of its kind in the United States.

Equipped with special drives and worm gears, this unique mill actually produces at the rate of 350 feet per minute—twice the speed of conventional tubing mills!

With speeds like this, you might expect lubrication troubles . . . but P&H Tube Corporation has none. One big reason is the careful study of each machine made by Cities Service Lubrication Engineer Neil Carmony—and the lubrication recommendations he made.

In hydraulic units, for example, Carmony recommended Pacemaker 200-T Hydraulic Oil . . . for he knew its ability to withstand the severest operating temperatures and speeds. He knew that due to its exceptionally high viscosity index and superior compounding, Pacemaker 200-T would give maximum resistance to thinning, oxidation, rust and corrosion.

The wisdom of this decision, as well as the choice of other lubricants shown in the chart at right, was demonstrated recently when P&H Tube Corporation ran off 125,000 feet of tubing in an ordinary eight hour shift—with normal time-out for change-overs!

That's production with a capital P! And if you'd like to improve your production picture, a Cities Service Lubrication Engineer can help you, too. Call the nearest office or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

What the Cities Service Lubrication Engineer Recommended

Hydraulic units	Pacemaker 200-T
Bearings	Trojan H-2 Grease
Drive units	Pacemaker Oils
Bearings by the mill's electrodes	Trojan S-1

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

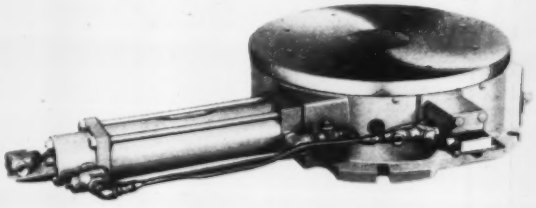
Air-Powered Index Table Has Rapid Action

This heavy duty, 24 in. diameter, air index table will handle workloads up to 1 ton and sustain repetitive radial and axial shock loads.

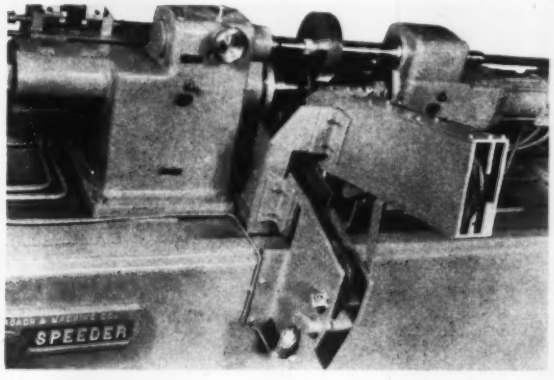
Fully loaded, the Model No. 2400 table equipped for six-station operation will index 30 positions a minute. Larger diameter plates can be bolted to the $1\frac{1}{4}$-in. thick table top when greater area is required.

A 4-in. air cylinder rotates the table. To prevent overriding, the indexing cylinder is controlled on the forward stroke by a positive, nonadjustable stop rod with an adjustable stop on the return stroke.

The table is accurately locked in position by another air cylinder mounted on the table centerline. *Write*: Air-Hydraulic Inc., 674 Hupp Ave., Jackson, Mich. *Phone*: Stockbridge 2-7956



Automatic Loader Handles Gears with Large Flanges



The Red Ring, rocker-type automatic loader for gears with large integral flanges is compact. It can be installed on gear shaving, gear tooth honing, and gear sound testing machines, and electronic sound discriminator-speeders.

The unit enables a machine with limited clearance between work and master gear, cutter, or honing tool to process a smaller gear on a relatively large diameter part.

The exit chute is adjacent to the input magazine.

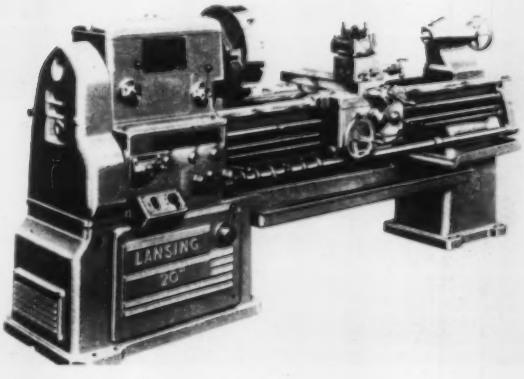
The loader illustrated is installed on a Red Ring electronic sound discriminator-speeder. Work is run in mesh with a master gear and the sound is analyzed. *Write*: National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich. *Phone*: Walnut 1-8980

Lathes Provide Speeds for Advanced Cutting Materials

Lansing toolroom and production lathes in 14, 16, 18, 20, and 22 in. swings (with bed lengths to order) are heavy duty machines with a wide range of feeds and speed. To utilize most advanced carbide and ceramic tooling, speeds up to 2400 rpm are provided.

The Norton gearbox allows you to cut a wide range of module, Whitworth, diametric, and metric pitch threads without changing gears. Feed and thread-cutting movements are independent of each other, permitting feed changes to be made while the machine is operating.

A safety device prevents simultaneous engagement of threading and feed movements. *Write*: S & S Machinery Co., 140 53rd St., Brooklyn 32, N. Y. **Phone**: Hyacinth 2-7400



NEW PRODUCTS and equipment

Steam Generated Quickly

Lectro-Heat generators produce steam in 45 seconds. Operating on an electrochemical principle, the units turn water at 32° F into steam without the use of heating elements. The water is vaporized without boiling.

Models providing up to 3 boiler horsepower (bhp) an hour occupy only slightly more than 3 cu ft. The 5 bhp model takes less than 7 cu ft. Five models are available; all deliver 30 lb of steam per boiler horsepower per hour.

Units can be used for part degreasing and washing or distillate-producing machinery. All are portable. They operate on 3-phase, 220-volt alternating current. *Write*: Lectro-Heat Products Corp., 12084 Woodbine, Detroit 39, Mich. *Phone*: Kenwood 7-1460

Portable Inspection Unit

Ferroflux is a low cost, portable, magnetic inspection device that effectively detects surface and subsurface defects in ferromagnetic materials. Its lightness (23 lb) makes it possible to take inspection to the workpiece.

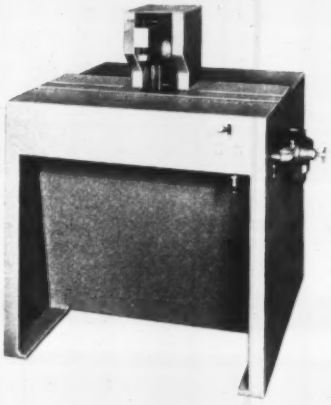
The unit consists essentially of a U-shaped, 110 volt electromagnet which operates at 0.175 kva. Its magnetic field is strong enough to hold the device to the surface it is checking, freeing the operator to handle the detection fluid.

Ferroflux can be operated for long periods without overheating. *Write*: Ferro Machine & Tool Co., 5514 W. Washington St., Indianapolis, Ind. *Phone*: Chapel 4-3993

Presses Have Sensitivity

Flexible-Power presses, for high production operations and small shops, perform hot or cold straightening operations (pneumatic-mechanical).

Sensitivity is maintained from the slowest ram movement to snap action, even at maximum press power. The operator can deflect the work a few thousandths of an inch at a time, controlling each movement through a constant contact underside gage.



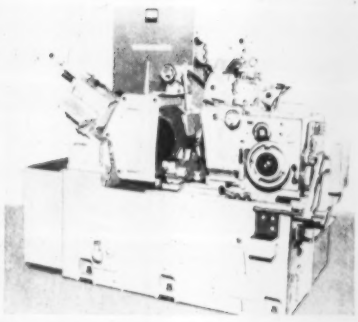
Presses range from 5 to 20 ton capacity. Hand or foot controls are optional. *Write*: General Mfg. Co., 6430 Farnsworth Ave., Detroit 11, Mich. *Phone*: Walnut 1-0190

Grinding Machines Better

Two precision, centerless grinding machines (Filmatic No. 1 and 2), rated at 15 and 25 hp, have been improved.

Grinding wheel truing controls are now at the left end of the bed for convenience. The bed is 5 in. longer to provide a greater area of support for grinding wheel truing units.

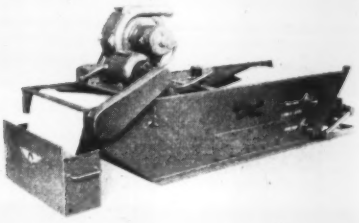
Greater throat capacity accommodates larger regulating wheels. For manual infeed with automatic hydraulic ejector, the infeed lever can be moved through a partial arc while still retaining the advantage of automatic ejection of the work.



The workrest pad has a parallel slot for alignment of the blade with a dial indicator. A new fluid control eliminates splashing and more effectively floods the work. *Write*: Cincinnati Grinders Inc., Cincinnati 9, Ohio. *Phone*: Redwood 1-2121

Filter Works by Vacuum

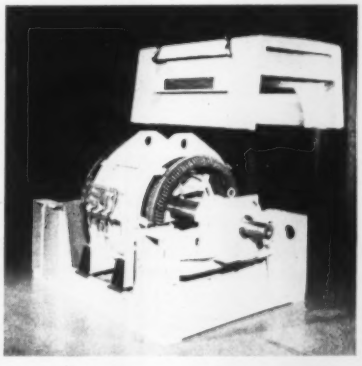
The Vacumatic 40 A provides continuous filtration of high flow coolants by vacuum instead of gravity. It uses a metal belt. *Write*: U. S. Hoffman Machinery Corp., 105 Fourth Ave., New York 3, N. Y. *Phone*: Oregon 7-3600



Motors Fully Accessible

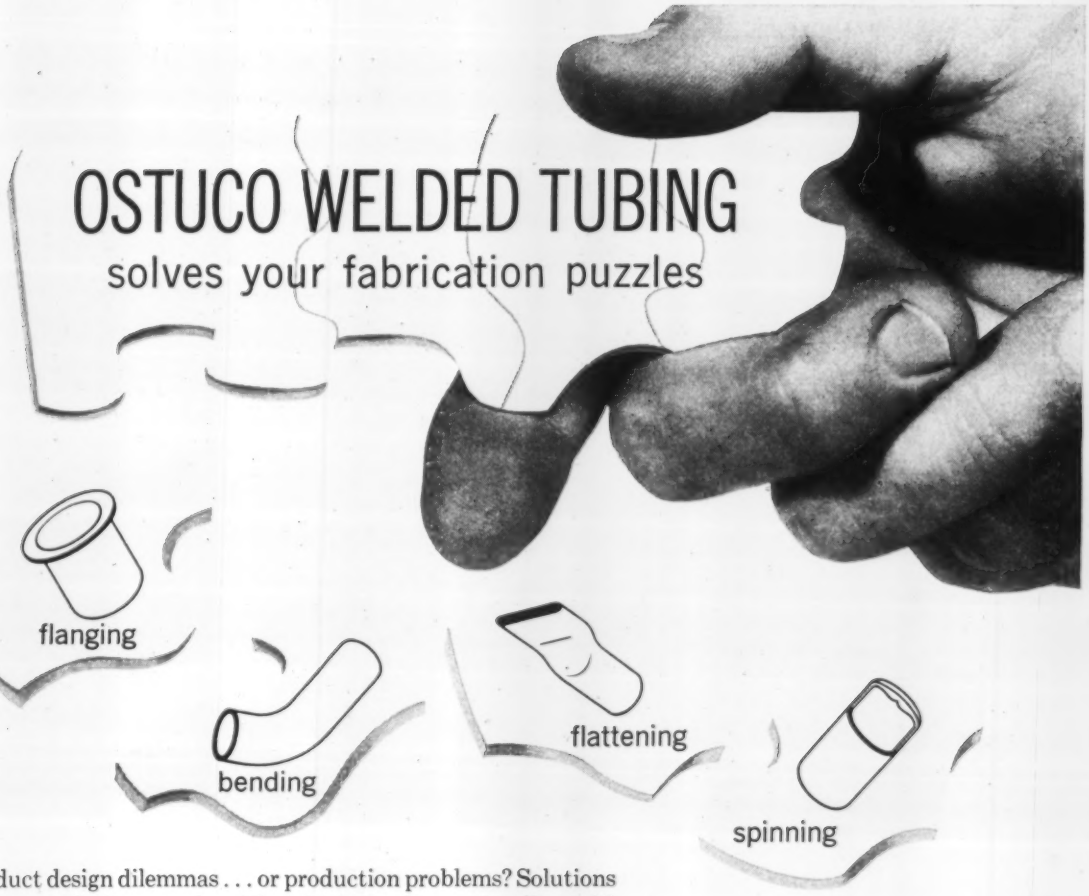
The enclosure of the F/A (fully accessible) motor is independent of the wound stator. During assembly, it is bolted to the motor base.

The complete line of Westinghouse squirrel-cage, wound rotor, and synchronous motors from 250



OSTUCO WELDED TUBING

solves your fabrication puzzles



Product design dilemmas . . . or production problems? Solutions to these perplexing puzzles fall right into place *naturally—with Ostuco Welded Tubing.*

First, Ostuco Welded Tubing is one of the most versatile of all materials. It can be subjected to virtually every fabricating operation known.

Second, we can perform any one or more of these fabricating operations. That means you add us to your production line without investment in equipment, inventory or plant.

Third, when you deal with Ohio Seamless you're dealing with tubing *experts* . . . men who can recommend the *exact* Ostuco Welded Tubing to suit your product and processes. Just contact our nearest sales office, or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.*

AA-7961

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OSTUCO SHELBY, OHIO
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OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company · SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

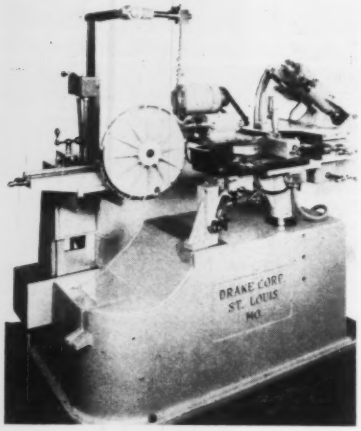
SALES OFFICES: Birmingham, Charlotte, Chicago (Oak Park), Cleveland, Dayton, Denver, Detroit (Huntington Woods), Houston, Los Angeles (Lynwood), Moline, New York, North Kansas City, Philadelphia (Wynnewood), Pittsburgh, Richmond, Rochester, St. Louis, St. Paul, St. Petersburg, Salt Lake City, Seattle, Tulsa, Wichita. CANADA: Railway & Power Engr. Corp., Ltd. EXPORT: Copperweld Steel International Company, 225 Broadway, New York 7, New York.

to 7000 hp (depending on speed) for all horizontal utility and industrial drive applications has been redesigned to use only six basic enclosures and 30 frame sizes. Formerly 450 frame sizes were used. *Write*: Westinghouse Electric Corp., Box 2278, Pittsburgh, Pa. *Phone*: Express 1-2800

Grinds Large Saws

Large, tungsten carbide tipped, circular saws can be sharpened quickly with close tolerance tooth uniformity by using a universal tool grinder.

The ST-12 grinder handles saws from 6 to 60 in. in diameter and cutters and cutter heads up to 4 in. thick.



Two models are provided: One for angular tooth work, the other for profile grinding. *Write*: Dept. SM, Drake Corp., 3231 Sutton Ave., St. Louis 17, Mo. *Phone*: Mission 5-3539

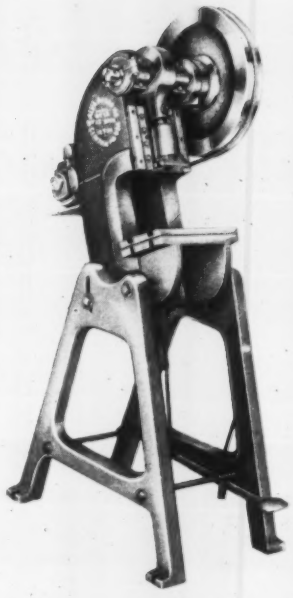
Press Tilts 30 Degrees

Model B-12 is a rugged 12-ton press with a frame of high quality gray iron. All points subject to strain have ribs and supports.

The clutch is a single pin, knife type with all contact parts hardened. The ram can be easily adjusted and locked.

The press has a large die space with a 5-in. throat and a 7-in. shut height with the standard 1¾-in. stroke and standard bolster plate.

Special strokes of ¼ to 3 in. are

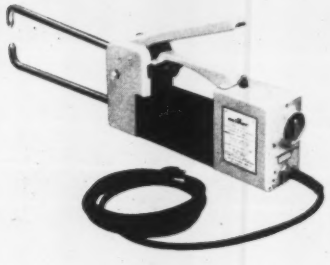


available. *Write*: Alva Allen Industries, 1001 N. Third St., Clinton, Mo. *Phone*: 1286

Welder Has Built-In Timer

The Lectro Spot welder has a built-in electronic timer designed to produce uniform welds.

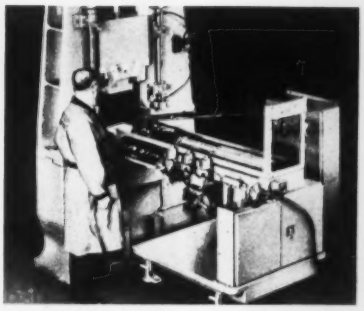
Both timer and handle pressure multiplier are instantly adjustable. When the operating handle is depressed, tongs grip the work at predetermined pressure, the start switch



is actuated, and the weld sequence starts and stops automatically. *Write*: Miller Electric Mfg. Co., Inc., Appleton, Wis. *Phone*: Regent 3-6621

Device Feeds Hammer

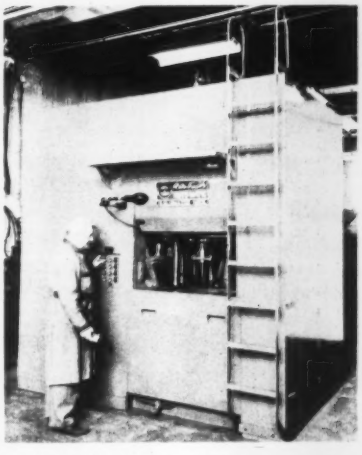
A feed that permits semiautomatic restrike or coining of forgings is used in conjunction with the Forming Drop, electrically controlled piston-lift, gravity drop hammer.



The mechanism, designed for coining operations, is mounted on a movable base that is adjustable to suit various die heights. *Write*: Chambersburg Engineering Co., Chambersburg, Pa.

Offers Low Microfinish

The Roto-Matic machine can handle parts as different in size and finish as refrigeration compressor components, jet engine blades, and steel steering knuckles.



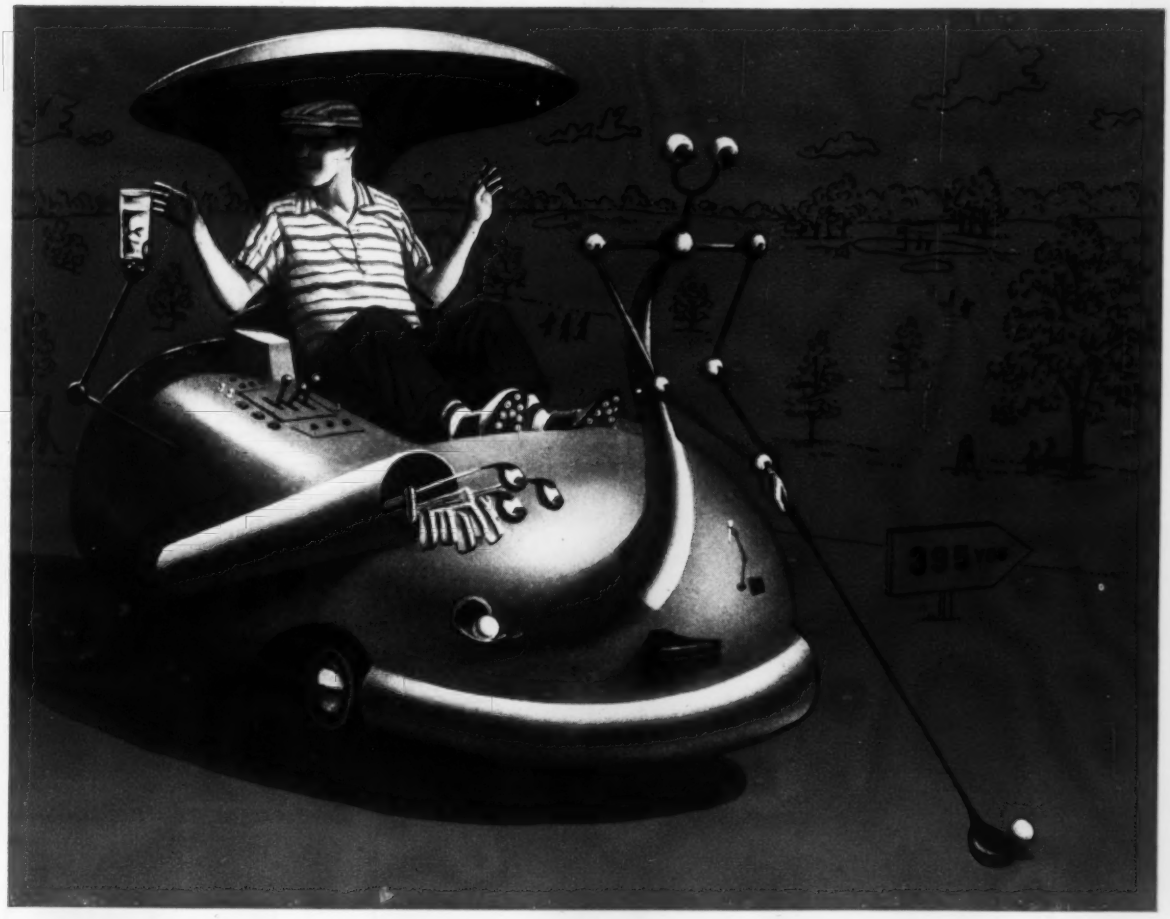
It is used primarily as a deburring unit but offers other finishing advantages: Polishing and surface improvement, microfinish of 3 to 4 rms (from a former 12 to 14), and stress relief.

Deburring and polishing can also be done on the inside diameters of parts. *Write*: Roto-Finish Co., Kalamazoo, Mich.

Drill Is Tape Controlled

The 2DNC McKaymatic drill is a two dimension, positioning, numerically controlled machine capable of handling workpieces 8 ft wide by 16 ft long.

The machine eliminates templates



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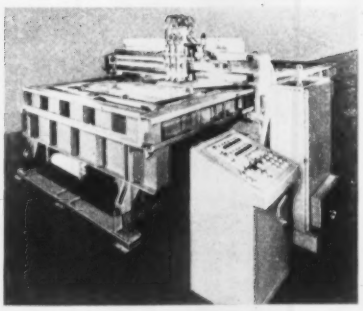
NEW PRODUCTS and equipment

and layout time, and has a gantry type drill carriage with a three-unit drill head. The numerically controlled X axis is 200 in. and the Y axis is 108 in.

The unit is capable of drilling holes in 5/16-in. thick aluminum on 1-in. centers at the rate of one hole every 5 seconds and will position to an accuracy of 0.005 in. in 200 in. of travel.

Repeatability is held to within



± 0.001 in. *Write*: McKay Machine Co., Youngstown, Ohio. *Phone*: Riverside 6-8449

Attachment Dumps Bins

An 8000 lb capacity, rotating bin, dumping attachment for Yale industrial lift trucks can handle bins ranging from 30 to 34 in. wide, 23 to 32 in. high, and up to 48 in. long.

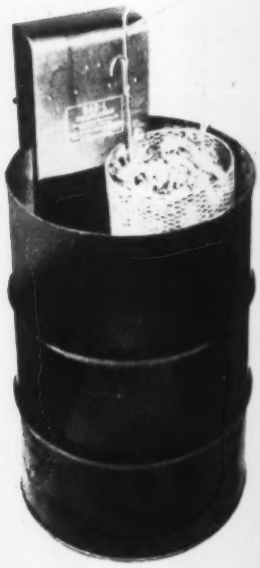
Two hydraulic cylinders control the heavy duty upper arms which lower to hold the bin firmly against the forks for rotating. The unit

rotates a full 360 degrees in either direction. *Write*: Yale Materials Handling Div., Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa. *Phone*: Orchard 3-1200

Degreaser Is Portable

The Bar-L vapor degreaser's smooth exterior and narrow width permit maximum use of a standard metal barrel for metal cleaning.

As a production unit, it has a ca-



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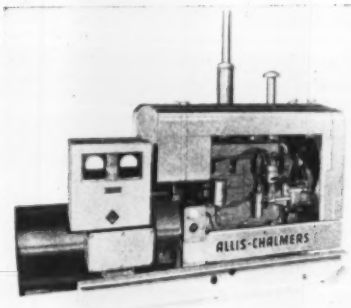
pacity of 700 lb an hour for steel parts. For plant maintenance, it can be moved anywhere and will clean parts up to 17 in. in diameter and 16 in. deep. *Write*: Manpro Corp., 1370 Hilton Rd., Detroit 20, Mich.

Power for Emergencies

The portable W-222 generator set develops 35 kw. It provides auxiliary or standby power for many jobs.

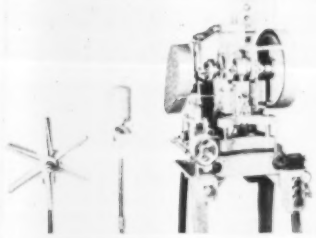


It is sold as a package unit with all necessary controls and accessories. It is completely weatherized. *Write*: Engine-Material Handling Div., Allis-Chalmers Mfg. Co., Milwaukee, Wis. *Phone*: Spring 4-3600

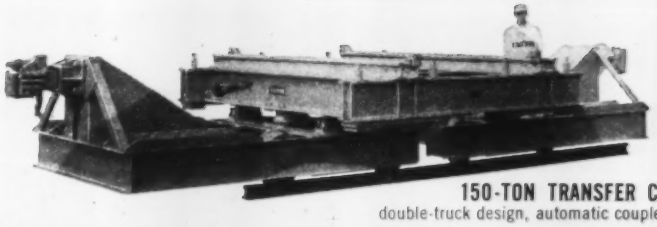
Machine Marks Tags

A press produces wrap-around tags from coil stock of aluminum or other soft metals and alloys. It marks tags of any length up to 7 in. using ¾-in. wide coil stock.

A tang is blanked on one end of the tag and an elongated hole or slot is punched at the opposite



end for eventual securing purposes. Tags are also marked with identification data, set in interchangeable type in a multiline holder. *Write*: Noble & Westbrook Mfg. Co., East Hartford, Conn. *Phone*: Butler 9-2717



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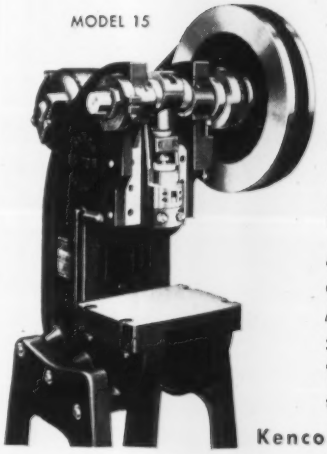

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Here's the strongest press possible to build, regardless of weight. Multiple-rib frame is a rigid Sorbomat casting—75% stronger than any comparable frame. Massive, trouble-free crankshaft is one-piece, alloy steel for maximum strength . . . oversize driving mechanism engineered to prevent breakdown. Entire press is built to hold repairs and maintenance to a new low.

Model 15-R—15-ton deep-throat, Rigid-Rib

Same construction features as Model 15 above, but with 15" throat. Negligible deflection at full-capacity punching.

Kenco presses—14 models—2 to 15 tons

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NEW literature

Write directly to the company for a copy

Heavy-Duty Roll Grinders

Farrel heavy-duty roll grinders are covered in a 28-page booklet. Recent design changes are shown. Six sizes are available. Farrel-Birmingham Co. Inc., Ansonia, Conn.

Milling Units Described

Dupli-Mill tracer-controlled milling units are described in a 6-page bulletin. Enumerated are features and specifications of the machines that can be mounted, fixtured, and operated in any plane. They can be used for tracer-controlled contour and profile milling in a wide range of metals. Colonial-Romulus Div., Colonial Broach & Machine Co., Parkgrove Station, Detroit 5, Mich.

Strip Stock Oiler

A stand-mounted strip stock oiler is described in Bulletin A-59. It lubricates strip stock leading to a press at any desired height and handles stock of various gages and widths. Stamping Specialty Co., 2141 N. Sherman Dr., Indianapolis 18, Ind.

Stock Roller Conveyors

Three new lines of stock roller conveyors are detailed in an 8-page booklet. Straight sections, curves, and supports are available for each type. Logan Co., 200 Cabel St., Louisville 6, Ky.

Three Data Sheets

Data sheets describe: Cleaners for use in power spray washing machines, a single-dip process for blackening steel, and an acid solution for producing luster on nonsilicon aluminum alloys. MacDermid Inc., Waterbury, Conn.

Electric Furnace

Design specifications and dimensional data on an electrically heated conveyor furnace are included in a 4-page bulletin. C. I. Hayes Inc., 822 Wellington Ave., Cranston 10, R. I.

Radial and Roller Bearings

Information on sizes, capacities, and typical applications of radial and roller bearings is included in a 64-page catalog, No. 58. Messinger Bearings Inc., 3725 D St., Philadelphia 24, Pa.

Catalog of Trucks

Pneumatic tired trucks (capacity: 1000 and 2000 lb) are described in a 12-page booklet. Included are items to be considered when buying trucks. Hyster Co., 1003 Myers St., Danville, Ill.

Power Unit Catalog

Data and specifications for Syntron's standard model and special underground service power units and standard and station-type battery chargers are listed in a 10-page booklet. Syntron Co., 370 Lexington Ave., Homer City, Pa.

Chlorine Compounds

Eleven organic chlorine compounds available in commercial quantities are listed in a 45-page booklet. Physical and physiological properties, shipping regulations, handling and storage data, and test methods are included. Union Carbide Chemicals Co., a division of Union Carbide Corp., 30 E. 42nd St., New York 17, N. Y.

Rolling Mills

A 32-page catalog on rolling mills includes the Fenn Standard Line, from 20 in. to 3 in. roll diameter mills, a section on mills for laboratory and advanced development, wire flattening mills, and a line of related accessories. Also detailed are formulas for selection of mills for rolling strip and wire, and a comparative specification chart. J. H. Charpentier, sales manager, Fenn Mfg. Co., Newington, Conn.

Brazing Instructions

"Brazing Manual," a 22-page book for self-instruction or class training in joining of metals, is addressed to the service trades. It has illustrated data on brazing shapes, sheets, castings, tubing, and assemblies of copper, brass, steel, aluminum, and cast iron. All-State Welding Alloys Co. Inc., 249-55 Ferris Ave., White Plains, N. Y.

Titanium Welding

"Titanium Welding Techniques," a 32-page handbook, outlines the do's and don'ts for successful welding. It covers fusion-welding equipment and procedures, resistance-welding equipment and procedures, a study of typical weldments, and methods for evaluating weld quality. Titanium Metals Corp. of America, 233 Broadway, New York 7, N. Y.

Proper Circuit Care

"Reducing Costs by Proper Care of Arc-Welding Circuits" is a 24-page, nontechnical booklet pointing out ways to keep electric arcwelding circuits operating properly. Mr. Hi-Amp, Lenco Inc., 350 W. Adams St., Jackson, Mo.

Machine Tools

Tools described in a new bulletin include: 15 and 20 in. drill presses, radial drill presses, band and scroll saws, tilting arbor saws, 12-in. wood and metal lathes, surface grinders, and cutoff machines. Dept. 1003, Walker-Turner Div., Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa.

Epoxy Compounds and Uses

"Epoxy Resins—Applications and Advantages" is an 8-page bulletin summarizing uses of epoxy compounds. Divisions cover plastic tooling, potting and impregnating, coating and adhesion. Marblette Corp., 37-31 30th St., Long Island City 1, N. Y.

Gasoline Engines

Two and four-cylinder, air cooled, gasoline engines are detailed in two 2-page bulletins. Included are installation diagrams, and a power chart. Hercules Motor Corp., 101 11th St., Canton, Ohio.

Computer Designs

Design techniques for electronic digital computers are outlined in a booklet. It explains application of advanced computer-aided design methods beginning with checking equations to preparation of component lists and wiring tabulations. Control Data Corp., 501 Park Ave., Minneapolis, Minn.

Expanding-Shrinking-Forming

Machines for expanding, shrinking, and roll forming metal are detailed in an 8-page catalog. Grotnes Machine Works Inc., 5454 N. Wolcott Ave., Chicago 40, Ill.

Fork Lift Trucks

A 16-page catalog describes engineering, design, construction, and operation of fork lift trucks. Engine-Material Handling Div., Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Caring for Wire Rope

A 36-page handbook is available on the use and care of wire rope. It explains proper selection, methods of socketing, splicing and installation, and safety pointers. Wire Rope Corp. of America, St. Joseph, Mo.

General Purpose Pumps

General process pumps are covered in a 4-page bulletin. Included are performance curves for pumps up to 15 hp, dimensions, principles of construction and operation, cutaway views, materials, and power requirements. Chempump Corp., 1300 E. Mermaid Lane, Philadelphia 18, Pa.

Conveyor Systems

A-F Engineered Belt Conveying Systems are described in a bulletin. It contains photographs of installations, blueprints detailing principal types of belt conveyors, and drawings showing arrangements of take-offs and jump-offs. Alvey-Ferguson Co., Cincinnati 9, Ohio.

Diecasting Alloys

Properties and applications of Di-Metal diecasting alloys are described in a 32-page booklet. A section lists diecasting specifications of the ASTM, SAE, U. S. Army, U. S. Navy, and Aeronautical Material Specifications. Federated Metals Div., American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.

Hydraulic Accumulators

Applications, sizes and types of hydropneumatic, bladder-type, accumulators are detailed in a 6-page booklet (No. PR-200). Included are eight basic circuit applications, dimensional data, selection information for hydraulic circuits, primary power reduction, pressure-volume compensation, and fluid dispensing. Products Div., Greer Hydraulics Inc., New York International Airport, Jamaica 30, N. Y.

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The New

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COIL CHAIN ELECTRIC HOIST WITH PUSH-BUTTON CONTROLS

Protection for both operator and hoist is built into the new Coffing Quik-Lift coil chain electric hoist. Although lightweight, the hoist is very sturdy. The motor is designed to reject any dangerous overloads.

The mechanically interlocked push-button controls are mounted in a non-conducting plastic station, and control circuits are 115 volts, regardless of hoist voltage. The V-Type brake provides much greater braking surface than conventional brakes, and when lowering, additional braking is provided by the motor in the form of regenerative electric braking.

Safety has been kept in mind through every step of the Coffing Quik-Lift design. For complete information on how these hoists can bring new safety, convenience and flexibility to your hoisting operations, consult your distributor or write for Bulletin ADH-65.

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- Interlocked Push-Button Controls
- Lightweight for Easy Portability
- Convenient Operation
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Market Outlook

Steel Production Levels Off

AFTER SEVEN WEEKS of robust recovery, steel production is leveling off. Last week's half-point improvement in the operating rate (to 64.5 per cent of capacity) following weekly increases of 3 or 4 points is an indication of that. Production was about 1,730,000 net tons of steel for ingots and castings, the highest of any week this year.

During the last few weeks, steel shipments have benefited considerably from buyers' anxiety to beat a midyear price increase. Since most mills require at least two weeks to process and ship an order, hedging is no longer a possibility. Demand will soon slacken and so will production. The downtrend may continue until August.

ORDER BOOKS FILLED— Whatever the explanation for their June prosperity, steelmen had the rare experience of being fully booked by the middle of the month. (They could handle more orders if they were operating all their facilities, of course, but they won't relight open hearths to meet temporary needs.) Product managers handling structural shapes, tubes, and galvanized sheets have been under a lot of pressure to guarantee shipment by June 30, but they're not accepting conditional orders. They remind customers that their policy is to bill at the price in effect at time of shipment.

AFTER JUNE, WHAT?— July will probably be the lowest production month of the second half, but it's beginning to look less ominous. As one steelman put it: "I've been surprised by the number of orders that have stuck after I've made it clear that we couldn't possibly ship before July." Vacations will slow steel consumption and output next month even if June hedging doesn't impair July sales, but there's some hope that production won't drop more than 10 per cent.

WAREHOUSES WON'T REBUILD— If steelmakers are counting on a reversal of consumer inventory policies to speed their recovery, they'll get little help from warehouses. Distributors added 800,000 tons to their stocks during 1956 and 1957. They began 1958 with an inventory of 3.7 million tons, and that's their inventory today. It's not regarded as excessive, but neither will it be increased. Warehouses buy only to replace what they ship. Their sales are off about 35 per cent. Improvements are spotty, and hedging has had no impact.

TIN PLATE SHINES— A sales leader all year, tin plate has done well without hedge buying. Some producers report that they're shipping 85 to 90 per cent of the metal they shipped a year ago. That's worthy of note because last year's shipment had an artificial stimulus: Buyers were given 60 days' notice of increases that were to become effective on Apr. 30, 1957, so they had ample time to stock up.

On Thursday, U. S. Steel Corp. will give tin plate another boost by kicking off a newspaper advertising campaign that's designed to sell canned soft drinks. Possible obstacles: 1. Consumers' habits. 2. Cans cost bottlers more than re-usable bottles. 3. Few bottlers can afford to scrap their machinery and buy new filling equipment.

SCRAP STOCKS SET RECORD— Consumers' stocks of iron and steel scrap reached a record high of 8.25 million gross tons on Apr. 30. Scrap consumption fell to a 1958 low of 3.43 million gross tons during April. Last week, STEEL's composite on the prime grade dropped 67 cents to $35 a ton. Look for the sluggish market to continue until late summer. By then, stocks should be down low enough to generate new demand and a moderate price recovery.

WHERE TO FIND MARKETS & PRICES

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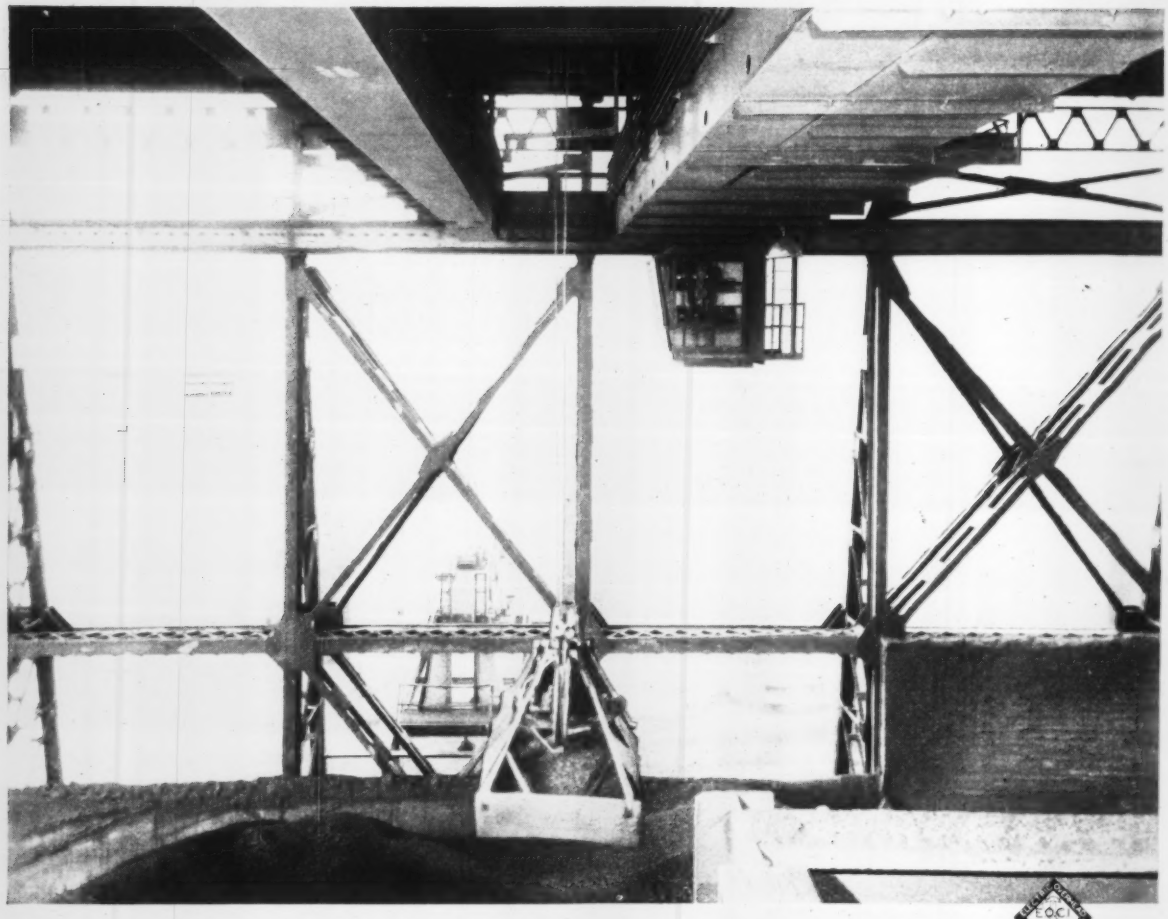

Here's how cement makers

MOVE MORE MATERIALS...FAST...AT LOW COSTS !

Whiting Engineered Cranes are quality-built to stand the gaff of full capacity operation... around the clock, if necessary. That's why Keystone Cement Company of Bath, Pennsylvania, specified this 9-ton Whiting Crane for their materials yard.

The herringbone gears in Whiting Cranes assure long life and quiet, smooth operation. Compact design and all-welded construction cut down dead weight... mean less drag, lower power cost. All moving parts are accessible for fast inspection and maintenance. Every crane is completely wired and assembled *at Whiting* to assure immediate and continued operating efficiency. And complete field service is always available.

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Wire Product Output Slips

(Tons)

	WIRE RODS	DRAWN WIRE	WIRE NAILS	BARBED WIRE	WOVEN WIRE FENCE	COILED BALING WIRE	BALE TIES
*1958	3,521,695	2,945,900	364,250	49,200	195,000	65,000	20,150
1957	4,695,595	3,680,871	455,269	58,793	210,965	67,866	22,062
1956	5,608,855	4,383,395	563,045	69,901	257,823	78,190	27,059
1955	6,098,293	4,786,685	653,161	126,846	323,702	95,262	32,262
1954	4,686,854	3,855,788	566,968	141,183	321,034	74,988	26,495
1953	5,192,719	4,162,912	525,561	169,995	227,860	50,378	24,638
1952	5,212,600	4,326,386	661,014	253,355	367,920	70,909	42,984
1951	6,231,140	5,225,674	843,437	240,275	422,661	98,018	97,291
1950	5,819,677	4,854,950	876,395	239,214	471,410	‡	78,619

*Estimated.
‡Not Available.
Source: American Iron & Steel Institute.

Bookings Move Up Slowly

June orders are best so far this year, but improvement is slight. Automotive cutbacks and heavy foreign competition are major reasons for lower production of wire

THERE ARE 165,000 uses for steel wire. This year, only about 20 of them will come up to the tonnage standards of the last few years. Some will show the sharpest declines since the general downtrend started in 1955 (see table above).

Among steel products, wire is one of the most sensitive to future industrial business trends. Wire slacked off months ahead of other steel products, and inventories have been worked to an unusually low level. A slow rate of improvement has been noted during the last three months. Orders for June are the best so far this year. But July will be drab, producers report; they expect buying and consumption to be up again by late third quarter.

Losing Ground—Wire, including fence and nails, is declining percentagewise in relation to total domestic steel shipments. The figure is about 4 per cent this year, compared with 5.1 per cent in 1955 (the last "good" year). Consumption has held at a better ratio than production because of the rise in imports, especially in several heavier tonnage items such as nails and barbed wire.

The decline in production has resulted in excess capacity even though this segment of the steel industry has not kept pace with other products in expansion plans since 1950. Capacity for rods is estimated at 7.3 million tons a year and drawn wire at 7.2 million tons. The industry's operating rate this year will be well below 50 per cent.

Plus Factors—One of the most active markets this year is wire and strand for prestressed concrete construction. This type construction is gaining in both bridge and building work. It has not lost the position it gained when plates and structural steel ran short during the boom. One source estimates the gain has been 200 per cent a year for the last seven years.

Preformed staples will require about 25,000 tons of wire this year. The auto industry will contribute heavily to this market. Some 1959 models will require from 4000 to 6000 air-driven staples. Stitching wire tonnage will be several times that for staples. Stitched paperboard containers and new automotive applications are partly responsible.

Some minor uses which will hold up well this year are bobby pins and florists' wire, which will consume about 20,000 tons of wire between them.

Disappointments — Wiremakers are hoping for a substantial upturn in requirements for reinforcing fabric during the second half. The government's road building program has been slow in reaching an antic-

ipated consumption rate of 265,000 tons annually. The industry built up its capacity to about 800,000 tons a year to satisfy this market. Demand for cables for suspension bridges is also slower than expected, although wire mill books show about a 10,000-ton backlog.

Makers of wire specialties lay much of their difficulties at the doorstep of the automakers. For example, tonnage for precision mechanical springs will fall far below the 145,000-ton marks in 1955 and 1956.

Import Problems — Foreign competition is one of the biggest problems. Barbed wire output this year may fall to 50,000 tons, compared with imports of 65,000 tons. Domestic capacity is about 575,000 tons. Producers of nails, with an annual capacity of 1,260,000 tons, will do well to produce 365,000 tons this year because of foreign competition. Wire fabric producers are also feeling this pinch.

In all cases, it's a matter of price. Midwest distributors of barbed wire pay $40 a ton less for this product rolled and fabricated in Dusseldorf, Germany, ocean and rail freight included. The opening of the St. Lawrence Seaway will intensify the problem.

Upgrading Imports—Imports are even beginning to cut into specialties. In the case of tire cord wire—a field in which American producers have led the way in research and development—foreign producers are entering the market with prices domestic makers can't meet.

With business off and foreign competition becoming stronger, some producers of finished wire goods are facing a narrower profit margin. Screws are a good example. Under intensified competition, many price hikes made in the third quarter of 1957 did not stand up. Wire rope and woven wire cloth prices are wobbling, although most primary wire prices are holding reasonably firm.

4 in 1

3 in 1

2 in 1

GASOLINE ENGINE DRIVEN WELDER/POWER PLANTS

FIREBALL AMPERAGE RANGES

METALLIC	INERT GAS
35-100 AC	35-75 AC
65-160 AC	65-160 AC
110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

All models offered with skids or trailers. Complete specifications and prices sent promptly.

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miller WELDERS

Wire . . .

Wire Prices, Pages 139 & 140

Except for off-the-shelf merchant wire products, demand for wire has slackened following the recent buying spurt by consumers seeking to beat a July 1 price increase. In New England, price-hedge buying of rods was heavier in May than in June.

Finished furniture coil wire is more active, and some forward covering of heading and high carbon spring wire has been noted, though tonnage was light. Some buyers entered the market too late to get guaranteed shipments by July 1.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 137

The National Wire Products Corp., Baltimore, reduced its price on welded wire concrete reinforcement building mesh $5 a ton, f.o.b. mill, effective June 13. That action brought the Baltimore price in line with that at Pittsburgh, Buffalo, and Portsmouth, Ohio.

The reduction by National, which operates the only producing plant for reinforcement mesh east of the Pittsburgh area, will affect delivered prices along the Atlantic seaboard from New England to Georgia. It was made to partially meet foreign competition.

National's prices on production

at its Tampa, Fla., plant remain unchanged.

Reinforcing bars are moving actively, with shipments paralleling the seasonal rise in building and construction. A streak of good weather would allow many projects to move ahead rapidly and could easily put a strain on fabricating capacity. The promptness with which mills are shipping is cutting into warehouse volume.

Steel Bars . . .

Bar Prices, Page 137

Price hedge buying served to inject a little activity into the carbon bar market in recent weeks. Some orders were placed to fill gaps in inventories. Consumers seem more concerned about their stocks than they were a couple months ago, and even though demand should drop next month, expectations are considerable spot buying will be done throughout the summer.

In the East, hot carbon bar deliveries average around two to three weeks, though some sellers can give shipments on hot and cold bars within a week to ten days. Quick deliveries are also available on alloy bars where extra processing is not required. Some makers can ship cold-finished from stock.

Pittsburgh and Cleveland mills have been booking larger bar volume. A Pittsburgh producer last week said: "Since April, we've had a steady improvement in sales. The facilities we're operating are pretty well booked up for June. Sales will probably be 10 per cent better than they were last month."

Automotive buying is still down, but occasional purchases of tonnage to finish the 1958 model run are noted. At Detroit, barmakers are beginning to get business from car builders and suppliers. One area seller says it has a 40 per cent increase in orders and shipments over last month.

Stainless Steel . . .

Stainless Steel Prices, Page 141

Stainless steels are beginning to move at Detroit, but activity is not as brisk as it is in carbon sheets and strip. Stainless for auto parts is doing better than it has for over a month. Most orders are small and are coming chiefly from auto industry suppliers. One maker figures it's getting at least 10 per cent more orders than it was booking two weeks ago. Most requests seek delivery before June's end.

Tubular Goods . . .

Tubular Goods Prices, Page 141

Pipe mills attribute a sudden increase in orders to hedge buying and inventory replenishment.

"Our buttweld entries are two and a half times what they were in May," says one large producer. "Bookings for standard and miscellaneous line pipe are almost nine times greater than they were for the same number of days last month."

Mills are flooded with orders for shipment before June 30. But one sales executive said: "We'll do our best to accommodate our customers, but we're making no guarantees. We'll either bill at the price in effect at time of shipment, or we won't accept the order."

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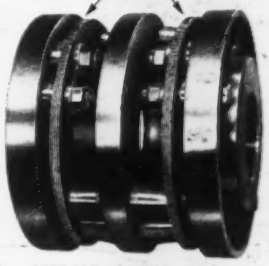

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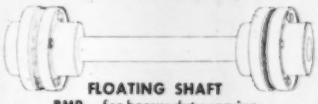

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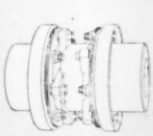

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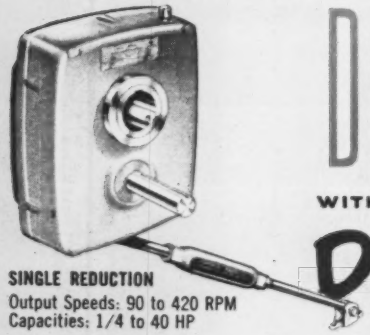

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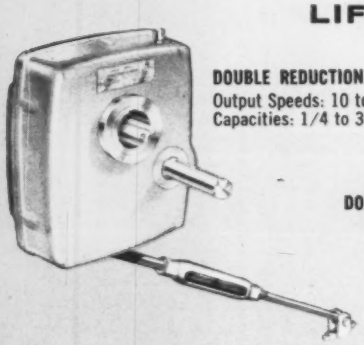
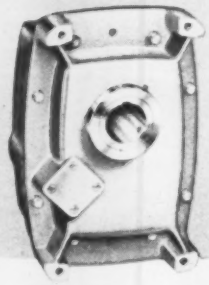
Capacities: 1/4 to 40 HP



DOUBLE REDUCTION
Output Speeds: 10 to 160 RPM
Capacities: 1/4 to 30 HP



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Capacities: 1 to 7 HP

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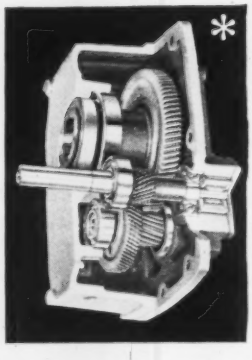

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mill can promise on small diameter pipe is early July.

Shipments of oil country goods are on the upgrade. A Pittsburgh maker booked several orders from major oil producers calling for bargeloads of tubing and casing.

Hedge buying of merchant pipe in New England is being largely filled from stocklists in buttweld; shipment of some seamless orders before the price advance July 1 is doubtful.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 138 & 139

Hedge buying against an expected price hike (possibly $4 to $6 a ton) at midyear is fading out of the sheet market picture as June nears its close. Possibly a few scattered lots can still be placed for late month delivery, but the over-all tonnage would be negligible.

Currently, a slightly better demand from some appliance makers is noted. Manufacturers of light household durables, though, hold substantial stocks of finished products, and accordingly, their purchasing and fabricating of sheets is limited.

Farm equipment interests are buying in fair volume. Building and construction requirements are substantial, notably for galvanized sheets. June galvanized orders were heavy. Most galvanizing lines were taxed close to capacity.

Two Detroit area sheetmakers report their June orders are up 20 per cent over May tonnage. Buyers can still get early deliveries at some points—two weeks on hot sheets and three to four on cold. Also, they can get most specialties in less than a month.

The base price on cold-rolled strip has been reduced $2 a ton to $7.15 per cwt at Detroit. This action is in line with the recent move of Great Lakes Steel reducing its f.o.b. Ecorse, Mich., prices on its various products.

Structural Shapes . . .

Structural Shape Prices, Page 137

Some of the increased demand for structurals is due to hedge buying against the July 1 price increase. Though some buyers won't be able to get deliveries until next month, it's unlikely much of the unshipped

anticipatory tonnage will be canceled.

Fabricators with definite commitments are pressing for deliveries of steel before the end of this month. Some of them are certain to be disappointed since most of the mills have been booked solidly, especially for wide flange beams.

Heavy bridge tonnage is pending in the East, and there is some improvement in miscellaneous commercial work in that area. Fabricating shop backlogs, though, are still tapering, and price competition continues keen.

Inquiry in New England includes 12,000 tons for radar and transmission towers, as well as 6000 tons for the Worcester, Mass., Expressway.

Original estimates on fabricated steel are not holding in New England. Contractors are shopping for lower prices, and getting them.

About 28,000 tons of structural steel will be required by the California Highway and Architecture Divisions in the fiscal year starting July 1. That's the estimate of C. M. Gilliss, state director of public works and chairman of the California Highway Commission.

It's easy to see the state's requirements totaling 50,000 tons of structurals a year sometime before 1964, he told a seminar sponsored by the American Institute of Steel Construction at Oakland, Calif. That's not taking into account any of the steel required for reconstruction or improvements of the state's toll bridges.

Plates . . .

Plate Prices, Page 137

Most plate mills are quoting around three-week delivery, which is a shade more extended than it was a month or so ago. Shipments of alloy plates run four to five weeks. Continuance of the relatively tight situation is questionable because the vacation season is getting closer.

Clad plate deliveries run about eight weeks, with heads, four to five.

Some immediate easing in demand should be noticeable because hedge buying against higher prices is no longer possible.

Of late, demand for plates has appeared a little more diversified

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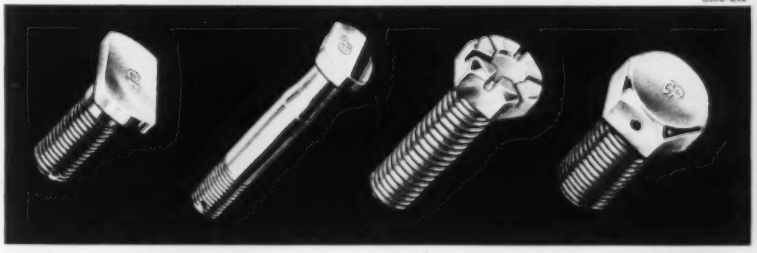

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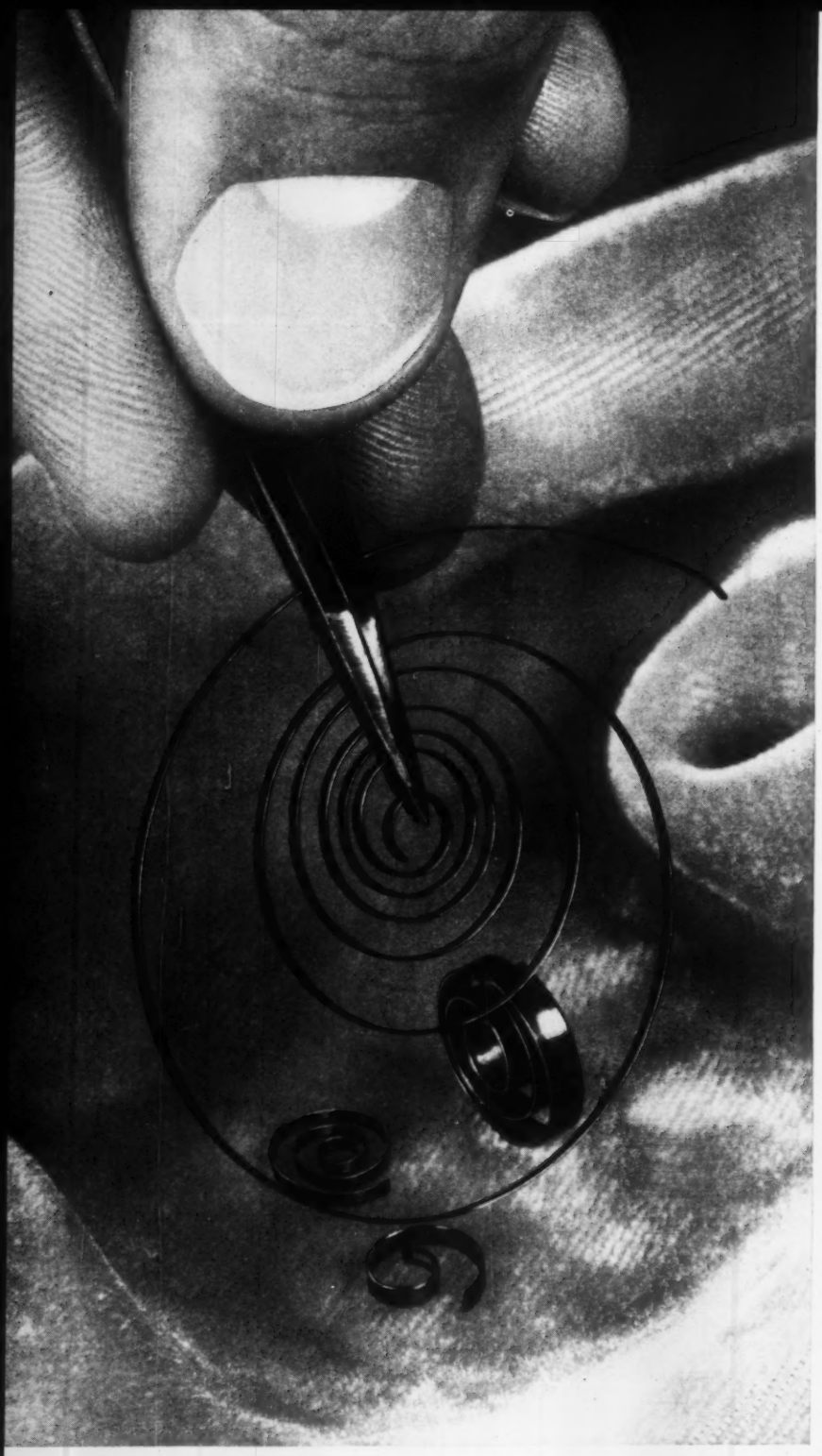

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Nilcor alloy is not a steel! It is truly unique. It is believed to have no equal, for example, for continuous life in miniature springs. Further, it is non-magnetic and far outdistances steel or any known alloy in resistance to "set", fatigue and corrosion . . . even at high temperatures.

Major use to date is for non-breakable power springs in fine watches. But more and more Nilcor alloy is and will be furnished for the most critical requirements in instrumentation, control devices and equipment of many types . . . wherever extreme spring life and precise behavior are vital.

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WAGNER LITHO MACHINERY, Secaucus, N. J.; *metal decorating equipment* • ATHENIA STEEL, Clifton, N. J.; *flat, high carbon spring steels* • REYNOLDS WIRE, Dixon, Ill.; *industrial wire cloth*

than it was. The situation has been due in part to prospects of higher prices July 1 and the desirability of laying in extra tonnage. Some platemakers booked light gages for shipment before July 1 as late as June 15, but, for the heavier sizes, many fabricators entered the market too late to get delivery before the prices may go up.

In New England, shipyard and storage tank demands are leading. Tank shops, though, reportedly hold substantial inventories.

Pittsburgh mills say the recent pickup largely reflected hedge buying, but some of the activity was due to demand arising from the need for immediate consumption tonnage. One area mill thinks its June business will top that of May, its best month to date this year. A sharp downturn in demand is indicated next month.

Semifinished Steel . . .

Semifinished Prices, Page 137

The national steel rate is climbing, but the pace of the upturn appears to be slackening. The ingot rate last week, at 64.5 per cent of capacity, was up ½ point. It marked the eighth straight weekly advance but contrasted with gains of 2 and 3 points in immediately preceding weeks.

Last week, advances were scored in most districts. Slight declines were reported in New England, Wheeling, and St. Louis, while the Buffalo rate held unchanged.

Expectations are production will drop in July, with consumption tapering as manufacturing plants close for mass vacations. Some observers would not be surprised if operations began to ease before the end of this month because many mills have plenty of semifinished steel on hand to accommodate their July schedules for finished steel production.

One big producer in the San Francisco area is back to operating only two of its five open hearths. A third furnace had been in operation the last several weeks as the mill sought to build up its semifinished stockpile.

U. S. Steel's Tennessee Coal & Iron Div. will close down its Ensley Works at Birmingham for at least a month starting July 7. Repairs will be made during the shutdown.

Shipments of Steel Products—April, 1958

(Net tons; all grades)

Steel Products:	April, 1958 Carbon	April, 1958 Alloy	April, 1958 Stainless	First Five Months 1958	First Five Months 1957
Ingots	11,464	11,361	2,516	98,697	171,612
Blooms, slabs, etc.	62,762	17,453	1,476	396,610	901,092
Tube rounds	596	177	6	2,787	33,129
Skelp	9,985	.....	.....	29,874	69,583
Wire rods	59,126	903	570	250,466	355,001
Structurals	297,119	3,951	3	1,308,919	2,251,616
Steel piling	36,172	56	.....	128,141	202,189
Plates	367,379	31,376	2,297	1,843,908	3,297,082
Rails (standard)	59,795	.....	.....	206,634	483,552
Rails (all other)	2,966	.....	.....	12,217	33,413
Joint bars	3,436	.....	.....	14,930	33,084
Tie plates	16,996	.....	.....	50,792	112,904
Track spikes	3,735	.....	.....	15,250	28,597
Wheels	12,084	74	.....	68,326	131,037
Axles	5,840	3	.....	38,317	71,755
Bars—hot rolled	308,908	64,859	2,434	1,629,532	2,963,186
Bars—reinforcing	175,637	.....	.....	541,570	913,602
Bars—cold finished	58,459	9,001	3,165	313,950	516,823
Tool steel	692	4,987	.....	23,652	37,850
Standard pipe	166,227	15	1	618,678	996,820
Oil country goods	51,568	13,826	.....	381,140	1,066,308
Line pipe	221,425	.....	.....	826,719	1,417,412
Mechanical tubing	27,551	12,028	276	175,813	308,883
Pressure tubing	14,274	2,635	1,059	86,126	160,156
Drawn wire	175,482	2,135	1,620	692,980	919,755
Nails & staples	36,411	.....	2	130,270	158,368
Barbed wire	7,237	.....	.....	23,297	27,422
Woven fence	21,629	.....	.....	69,084	95,127
Bale ties & baling wire	6,429	.....	.....	13,121	16,474
Black plate	53,196	.....	.....	206,028	283,651
Tin plate (hot dipped)	43,670	.....	.....	141,375	394,844
Tin plate (electro)	468,568	.....	.....	1,766,939	2,182,927
Sheets (hot rolled)	368,741	16,978	1,552	1,747,956	3,009,904
Sheets (cold rolled)	616,615	3,033	8,339	2,913,368	4,248,281
Sheets (galvanized)	206,368	.....	.....	756,813	846,365
Sheets (other coated)	10,588	.....	.....	51,662	71,121
Elec. sheets & strip	1,889	34,035	.....	148,195	242,340
Strip (hot rolled)	61,357	1,308	680	285,715	543,436
Strip (cold rolled)	54,609	1,870	7,926	309,696	432,696
Total (1958)	4,106,985	232,064	33,922	18,319,547	.....
Total (1957)	6,864,901	426,594	58,257	.....	30,029,397

Data from the American Iron & Steel Institute.

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Milwaukee 14, Wisconsin, U.S.A.

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A8-4522-1/4A

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1400 tons, bascule bridge, including machinery, Westport, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.; Coleman Bros. Corp., Boston, general contractor.

1120 tons, courthouse, Doylestown, Pa., through Wark & Co., general contractor, to Keystone Structural Steel Co., Trenton, N. J.

880 tons, two wards, state hospital, Wernersville, Pa., through Sardoni Construction Co., Middletown, Pa., to Bethlehem Contracting Co., Bethlehem, Pa.

700 tons, state highway bridges, Albany County, New York, to City Iron Works, Hartford, Conn.; Lane Construction Co., Meriden, Conn., general contractor.

500 tons, buildings, Homestead Air Force Base, Middletown, Pa., through Fleming Co., general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

370 tons, bridge, Androscoggin River, Livermore Falls, Maine, to Bethlehem Steel Co., Bethlehem, Pa.; Cianchett Construction Co., Augusta, Maine, general contractor.

350 tons, state bridge, Monroe County, Pennsylvania, through Gastarine Excavators, to Pusey & Jones, Wilmington, Del.

300 tons, sales office building for Du Pont Interests, Wilmington, Del.

250 tons, railroad overpass, Camden County, New Jersey, through F. H. Canuso & Sons, Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.

200 tons, warehouse, Sears Roebuck & Co., Philadelphia; general contractors' bids, June 26.

150 tons, warehouse, Kimberly-Clark Paper Co., New Milford, Conn., to Topper & Griggs (Bethlehem Fabricators Inc.) West Hartford, Conn.; W. J. Megin Inc., Naugatuck, Conn., general contractor.

115 tons, state highway I-beam bridge, Greencastle-Mercersburg, Pa., to Harry Savlov Co., Harrisburg, Pa.; Middlecreek Construction Co., Winfield, Pa., general contractor; reinforcing bars, Taylor-Davis Inc., Philadelphia.

RAILS, CARS . . .

RAILROAD CARS PLACED

Chicago, Burlington & Quincy, 250 freight cars with 100 covered hoppers going to the Pullman-Standard Car Mfg. Co., Chicago, 50 to the General American Transportation Corp., Chicago, and the remainder to the road's own shops.

Western Pacific, four air slide hoppers, to the General American Transportation Corp., Chicago.

RAILROAD CARS PENDING

General Services Administration, Seattle, 50 flatcars for the Alaska Railway; bids closed June 20.

REINFORCING BARS . . .

REINFORCING BARS PLACED

255 tons, nine-span stringer bridge (viaduct), North Adams, Mass., to Scherer Steel Co., Hartford, Conn.; J. F. Fitzgerald Construction Co., Canton, Mass., general contractor.

180 tons, Nike installation, Eielson Air Base, Alaska, to Joseph T. Ryerson & Son Inc., Seattle; B.E.C.K. & Associates, Seattle, general contractors.

165 tons, warehouse, Kimberly-Clark Paper Co., New Milford, Conn., to Fox Steel Co., Orange, Conn.; W. J. Megin Inc., Naugatuck, Conn., general contractor.

138 tons, mess hall, Elmendorf Air Base, Alaska, and Washington highway project, to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

2200 tons, Flaming Gorge dam and powerhouse, Utah; general bids in to the U. S. Bureau of Reclamation.

300 tons, Washington State highway project, Kittitas County; general contract to Quigg Bros., McDonald Inc., Hoquiam, Wash., low at $393,079.

130 tons, Washington State highway work, Snohomish and Whitman Counties; bids to Olympia, Wash., July 1.

Steel Shipments by Markets—April, 1958

(Net tons; all grades)

Markets	April Tonnages 1958	April Tonnages 1957	Total First Four Months 1958	Total First Four Months 1957
Converting & processing	215,844	308,269	884,789	1,264,614
Forgings (other than auto)	54,413	105,092	233,478	433,166
Bolts, nuts, etc.	51,760	89,763	237,053	448,990
Warehouses:				
Oil & gas industry	58,294	222,040	303,772	924,800
All other	749,506	1,124,445	2,758,172	4,714,681
Total warehouse	807,800	1,346,485	3,061,944	5,639,481
Construction:				
Rail transportation	3,446	5,230	16,467	23,717
Oil & gas	150,944	304,400	597,106	1,150,210
All other	499,172	801,182	2,002,939	3,083,957
Total construction	653,562	1,110,812	2,616,512	4,257,884
Contractors' products	266,973	305,315	1,015,397	1,271,260
Automotive:				
Cars, trucks, parts	448,223	1,033,444	2,724,703	4,983,552
Forgings	14,441	27,474	76,472	128,198
Total automotive	462,664	1,060,918	2,801,175	5,111,750
Rail transportation:				
Rails, track, equipment	64,538	155,985	245,345	635,933
Cars & locomotives	62,095	245,284	350,158	1,017,941
Street railways, etc.	2,375	3,962	6,890	11,120
Total transportation	129,008	405,231	602,393	1,664,994
Shipbuilding	74,148	100,656	309,596	369,959
Aircraft	4,455	11,141	19,480	45,726
Oil and gas drilling	23,961	65,999	115,286	277,657
Mining, quarrying, lumber	17,835	35,719	60,994	122,148
Agricultural:				
Agricultural machinery	69,524	79,168	296,183	333,144
All other	20,590	17,690	66,098	66,301
Total agricultural	90,114	96,858	362,281	399,445
Machinery, tools, etc.	230,954	448,315	1,012,753	1,797,724
Elec. machinery, etc.	140,765	184,446	565,583	781,430
Appliances, etc.	111,919	125,710	466,320	590,946
Other domestic equipment	128,065	154,471	516,581	677,958
Containers:				
Cans and closures	490,416	730,385	1,838,558	2,354,899
Barrels, drums, etc.	65,540	69,579	234,084	294,290
All other containers	34,657	54,426	143,943	227,103
Total containers	590,613	854,390	2,216,585	2,876,292
Ordnance, military	22,127	31,937	75,709	150,749
Nonreported shipments	54,489	78,315	208,501	313,799
Total domestic shipments	4,131,469	6,919,842	17,382,410	28,495,972
Exports	241,502	429,910	937,137	1,533,425
Total shipments	4,372,971	7,349,752	18,319,547	30,029,397

Data from the American Iron & Steel Institute.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended June 22	Change	Same Week 1957	Same Week 1956
Pittsburgh	60.5	+ 3.5*	88	95
Chicago	70	+ 1*	84.5	98
Mid-Atlantic	62	+ 2	94.5	97
Youngstown	53	+ 3	80	101
Wheeling	70	— 5	83.5	99.5
Cleveland	48	+ 2.5*	87	95
Buffalo	53.5	0	102.5	105
Birmingham	66	+ 5.5	92.5	23.5
New England	39	— 2	56	85
Cincinnati	64	+ 4*	79	88.5
St. Louis	86	— 9.5	56.5	96.5
Detroit	69.5	+ 1.5*	100	94.5
Western	74	+ 2	101	105
National Rate	64.5	+ 0.5	88	95.5

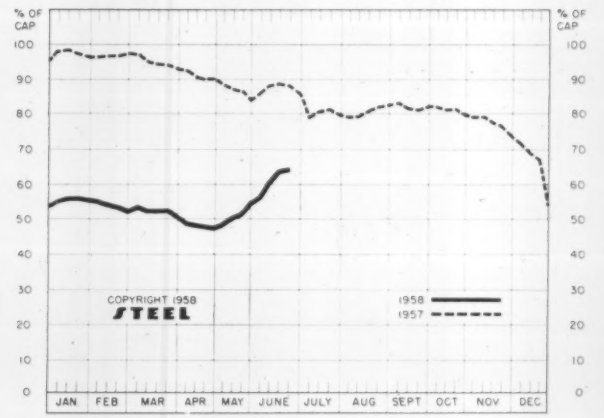
INGOT PRODUCTION‡

	Week Ended June 22	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	108.1†	107.6	94.8	135.8
NET TONS (In thousands)	1,730†	1,728	1,523	2,181

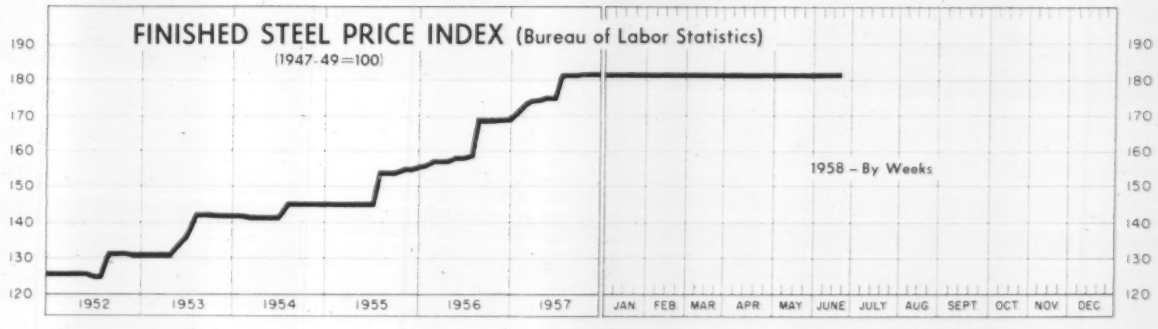
*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute.

Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



June 17, 1958	Week Ago	Month Ago	May Avg	Year Ago
181.5	181.5†	181.6	181.6	174.3

†Revised.

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended June 17

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.600
Rails, Light, 40 lb	7.067
Tie Plates	6.600
Axles, Railway	9.825
Wheels, Freight Car, 33 in. (per wheel)	60.000
Plates, Carbon	6.150
Structural Shapes	5.942
Bars, Tool Steel, Carbon (lb)	0.535
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.650
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.355
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.850
Bars, H.R., Alloy	10.525
Bars, H.R., Stainless, 303 (lb)	0.525
Bars, H.R., Carbon	6.425
Bars, Reinforcing	6.135
Bars, C.F., Carbon	10.360
Bars, C.F., Alloy	13.875
Bars, C.F., Stainless, 302 (lb)	0.553
Sheets, H.R., Carbon	6.175
Sheets, C.R., Carbon	7.075
Sheets, Galvanized	8.270
Sheets, C.R., Stainless, 302 (lb)	0.688
Sheets, Electrical	12.025
Strip, C.R., Carbon	9.214
Strip, C.R., Stainless, 430 (lb)	0.493
Strip, H.R., Carbon	6.075
Pipe, Black, Buttweld (100 ft)	19.814
Pipe, Galv., Buttweld (100 ft)	23.264
Pipe, Line (100 ft)	199.023
Casing, Oil Well, Carbon (100 ft)	194.499
Casing, Oil Well, Alloy (100 ft)	304.610
Tubes, Boiler (100 ft)	49.130
Tubing, Mechanical, Carbon (100 ft)	24.953
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
Black Plate, Canmaking Quality (95 lb base box)	7.583
Wire, Drawn, Carbon	10.225
Wire, Drawn, Stainless, 430 (lb)	0.653
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.828
Wire, Barbed (80-rod spool)	8.719
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	June 18 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	239.15	239.15	239.15	228.59	187.38
Index in cents per lb	6.479	6.479	6.479	6.193	5.076

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$145.42	$145.42	$145.42	$140.24	$111.93
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	64.70	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	64.23	54.66
Malleable Pig Iron, GT	67.27	67.27	67.27	65.77	55.77
Steelmaking Scrap, GT	35.00	35.67	33.50	55.67	39.83

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	June 18 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.425	5.425	5.425	5.075	4.15
Bars, H.R., Chicago	5.425	5.425	5.425	5.075	4.15
Bars, H.R., deld. Philadelphia	5.725	5.725	5.725	5.365	4.302
Bars, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	5.20
Shapes, Std., Pittsburgh	5.275	5.275	5.275	5.00	4.10
Shapes, Std., Chicago	5.275	5.275	5.275	5.00	4.10
Shapes, deld. Philadelphia	5.545	5.545	5.545	5.31	4.38
Plates, Pittsburgh	5.10	5.10	5.10	4.85	4.10
Plates, Chicago	5.10	5.10	5.10	4.85	4.10
Plates, Coatesville, Pa.	5.10	5.10	5.10	5.25	4.35
Plates, Sparrows Point, Md.	5.10	5.10	5.10	4.85	4.10
Plates, Claymont, Del.	5.10	5.10	5.10	5.70	4.35
Sheets, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.925
Sheets, H.R., Chicago	4.925	4.925	4.925	4.675	3.925
Sheets, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.775
Sheets, C.R., Chicago	6.05	6.05	6.05	5.75	4.775
Sheets, C.R., Detroit	6.05	6.05	6.05-6.15	5.75-5.85	4.775
Sheets, Galv., Pittsburgh	6.60	6.60	6.60	6.30	5.275
Strip, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.975-4.225
Strip, H.R., Chicago	4.925	4.925	4.925	4.675	3.925
Strip, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Strip, C.R., Chicago	7.15	7.15	7.15	6.85	5.70
Strip, C.R., Detroit	7.15	7.15-7.25	7.25	6.95	5.30-6.05
Wire, Basic, Pittsburgh	7.65	7.65	7.65	7.20	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.49	6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$96.00	$96.00	$96.00	$91.50	$70.50
Wire rods, 7/32-5/8" Pitts.	6.15	6.15	6.15	5.80	4.425

PIG IRON, Gross Ton

	June 18 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$65.50	$55.50
Basic, Valley	66.00	66.00	66.00	64.50	54.50
Basic, deld., Phila.	70.41	70.41	70.41	68.38	59.25
No. 2 Fdry, NevilleIsland,Pa.	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	65.00	55.00
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	68.88	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	65.00	55.00
Malleable, Chicago	66.50	66.50	66.50	65.00	55.00
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$35.50	$35.50	$32.50	$56.50	$40.50
No. 1 Heavy Melt, E. Pa.	34.00	34.50	34.50	56.50	41.50
No. 1 Heavy Melt, Chicago	35.50	37.00	33.50	54.00	37.50
No. 1 Heavy Melt, Valley	36.50	36.50	36.50	54.50	42.50
No. 1 Heavy Melt, Cleve.	33.00	33.00	33.00	51.50	40.50
No. 1 Heavy Melt, Buffalo	26.50	26.50	26.50	46.50	40.75
Rails, Rerolling, Chicago	52.50	54.00	51.50	74.50	47.50
No. 1 Cast, Chicago	41.50	41.50	40.50	48.50	39.00

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.00	17.00

An expert in check-out helped us check up

This test pilot of ours has checked out every new design we've had in the last two years. His business is finding answers to questions. But last week he asked *us* one.

"Why can't we rig it so I can buy U. S. Savings Bonds out of my salary, automatically?" he asked. "I want to save, but I keep forgetting about it."

We told him, of course, that we've had Payroll Savings for years. Within minutes his card was signed and he was brought into the Plan. Then we decided to check up and see how many other people on our staff had never heard about the Plan. There were quite a few.

A telephone call to our State Savings Bond Director was all we needed. He supplied us with the latest booklets, folders and forms. Then he conducted a survey straight through our company and put an application blank in the hands of every single employee.

There wasn't a bit of pressure about this information campaign, but the way our people responded was inspiring. They proved that the average American wants the fine investment security that U. S. Savings Bonds provide.

Today there are more Payroll savers than ever before in peacetime. Your State Director will be happy to help you install a Payroll Savings Plan or build enrollment in one already existing. Look him up in the phone book or write: Savings Bonds Division, U. S. Treasury Dept., Washington, D. C.

STEEL
The Metalworking Weekly

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE

Steel Prices

Mill prices as reported to STEEL, June 18, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicate producing company. Key to producers, page 138; to footnotes, page 140.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$73.50

INGOTS, Alloy (NT)
Detroit S41 .....$77.00
Farrell,Pa. S3 .....77.00
Lowellville, O. S3 ....77.00
Midland,Pa. C18 .....77.00
Munhall,Pa. U5 .....77.00
Sharon,Pa. S3 .....77.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$77.50
Buffalo R2 .....77.50
Clairton,Pa. U5 .....77.50
Ensley,Ala. T2 .....77.50
Fairfield,Ala. T2 .....77.50
Fontana,Calif. K1 ....88.00
Gary,Ind. U5 .....77.50
Johnstown,Pa. B3 ....77.50
Lackawanna,N.Y. B2 ..77.50
Munhall,Pa. U5 .....77.50
Owensboro,Ky. G8 ....77.50
S.Chicago,Ill. R2, U5..77.50
S. Duquesne,Pa. U5 ...77.50
Sterling,Ill. N15 .....77.50
Youngstown R2 .....77.50

Carbon, Forging (NT)
Bessemer,Pa. U5 .....$96.00
Buffalo R2 .....96.00
Canton,O. R2 .....96.50
Clairton,Pa. U5 .....96.00
Conshohocken,Pa. A3..101.00
Ensley,Ala. T2 .....96.00
Fairfield,Ala. T2 .....96.00
Fontana,Calif. K1 ....105.50
Gary,Ind. U5 .....96.00
Geneva,Utah C11 .....96.00
Houston S5 .....101.00
Johnstown,Pa. B2 ....96.00
Lackawanna,N.Y. B2 ...96.00
Los Angeles B3 .....105.50
Midland,Pa. C18 .....96.00
Munhall,Pa. U5 .....96.00
Owensboro,Ky. G8 .....96.00
Seattle B3 .....109.50
Sharon,Pa. S3 .....96.00
S.Chicago R2, U5, W14 96.00
S.Duquesne,Pa. U5 ...96.00
S.SanFrancisco B3 ...105.50
Warren,O. C17 .....96.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$114.00
Bridgeport,Conn. C32..114.00
Buffalo R2 .....114.00
Canton,O. R2, T7 ....114.00
Conshohocken,Pa. A3 .121.00
Detroit S41 .....114.00
Economy,Pa. B14 .....114.00
Farrell,Pa. S3 .....114.00
Fontana,Calif. K1 ....135.00
Gary,Ind. U5 .....114.00
Houston S5 .....119.00
Ind.Harbor,Ind. Y1 ...114.00
Johnstown,Pa. B2 .....114.00
Lackawanna,N.Y. B2 ...114.00
LosAngeles B3 .....134.00
Lowellville,O. S3 .....114.00
Massillon,O. R2 .....114.00
Midland,Pa. C18 .....114.00
Munhall,Pa. U5 .....114.00
Owesboro,Ky. G8 .....114.00
Sharon,Pa. S3 .....114.00
S.Chicago R2,U5,W14 .114.00
S.Duquesne,Pa. U5 ...114.00
Struthers,O. Y1 .....114.00
Warren,O. C17 .....114.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$117.50
Canton,O. R2 .....120.00
Cleveland R2 .....117.50
Gary,Ind U5 .....117.50
S.Chicago,Ill. R2, W14 117.50
S.Duquesne,Pa. U5 ...117.50
Warren,O. C17 .....117.50

SKELP
Aliquippa,Pa. J5 ....5.075
Munhall,Pa. U5 .....4.875
Pittsburgh J5 .....5.075
Warren,O. R2 .....4.875
Youngstown R2, U5 ..4.875

WIRE RODS
AlabamaCity,Ala. R2 ...6.15
Aliquippa,Pa. J5 .....6.15
Alton,Ill. L1 .....6.35
Buffalo W12 .....6.15
Cleveland A7 .....6.15
Donora,Pa. A7 .....6.15
Fairfield,Ala. T2 .....6.15
Houston S5 .....6.40
IndianaHarbor,Ind. Y1 ..6.15
Johnstown,Pa. B2 .....6.15
Joliet,Ill. A7 .....6.15
KansasCity,Mo. S5 ....6.40
Kokomo,Ind. C16 .....6.25
LosAngeles B3 .....6.95
Minnequa,Colo. C10 ....6.40
Monessen,Pa. P7 .....6.15
N.Tonawanda,N.Y. B11 .6.15
Pittsburg,Calif. C11 ....6.95
Portsmouth,O. P12 .....6.15
Roebling,N.J. R5 .....6.25
S.Chicago,Ill. R2 .....6.15
SparrowsPoint,Md. B2..6.25
Sterling,Ill.(1) N15 ....6.15
Sterling,Ill. N15 .....6.25
Struthers,O. Y1 .....6.15
Worcester,Mass. A7 ....6.45

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.275
Atlanta A11 .....5.475
Aliquippa,Pa. J5 ....5.275
Bessemer,Ala. T2 ....5.275
Bethlehem,Pa. B2 ....5.325
Birmingham C15 ....5.275
Clairton,Pa. U5 .....5.275
Fairfield,Ala. T2 .....5.275
Fontana,Calif. K1 ....6.075
Gary,Ind. U5 .....5.275
Geneva,Utah C11 .....5.275
Houston S5 .....5.375
Ind.Harbor,Ind. I-2 ...5.275
Johnstown,Pa. B2 ....5.325
Joliet,Ill. P22 .....5.275
KansasCity,Mo. S5 ....5.375
Lackawanna,N.Y. B2 ..5.325
LosAngeles B3 .....5.975
Minnequa,Colo. C10 ...5.575
Munhall,Pa. U5 .....5.275
Niles,Calif. P1 .....5.925
Phoenixville,Pa. P4 ...5.325
Portland,Oreg. O4 ....6.025
Seattle B3 .....6.025
S.Chicago,Ill. U5, W14 5.275
S.SanFrancisco B3 ....5.925
Sterling,Ill. N15 .....5.275
Torrance,Calif. C11 ...5.975
Weirton,W.Va. W6 ...5.275,

Wide Flange
Bethlehem,Pa. B2 ....5.325
Cairton,Pa. U5 .....5.275
Fontana,Calif. K1 ....6.225
IndianaHarbor,Ind. I-2 5.275
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
Phoenixville,Pa. P4 ...5.325
S.Chicago,Ill. U5 .....5.275
Weirton,W.Va. W6 ....5.275

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.55
Clairton,Pa. U5 .....6.55
Gary,Ind. U5 .....6.55
Houston S5 .....6.65
KansasCity,Mo. S5 ....6.65
Munhall,Pa. U5 .....6.55
S.Chicago,Ill U5 .....6.55

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 .....7.75
Bessemer,Ala. T2 .....7.75
Bethlehem,Pa. B2 .....7.80
Clairton,Pa. U5 .....7.75
Fairfield,Ala. T2 .....7.75
Fontana,Calif. K1 ....8.55
Gary,Ind. U5 .....7.75
Geneva,Utah C11 .....7.75
Houston S5 .....7.85
Ind.Harbor,Ind. I-2, Y1 7.75
Johnstown,Pa. B2 .....7.80
KansasCity,Mo. S5 ....7.85
Lackawanna,N.Y. B2 ...7.80
LosAngeles B3 .....8.45
Munhall,Pa. U5 .....7.75
Seattle B3 .....8.50
S.Chicago,Ill. U5, W14 ..7.75
S.SanFrancisco B3 ....8.40
Struthers,O. Y1 .....7.75

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....7.80
Lackawanna,N.Y. B2 ...7.80
Munhall,Pa. U5 .....7.75
S.Chicago,Ill. U5 .....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 ....5.325
Lackawanna,N.Y. B2 ..5.325
Munhall,Pa. U5 .....5.275
S.Chicago,Ill. U5 .....5.275

STEEL SHEET PILING
Lackawanna,N.Y. B2 ...6.225
Munhall,Pa. U5 .....6.225
S.Chicago,Ill. U5 .....6.225
Weirton,W.Va. W6 ....6.225

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(15) A10 ...5.10
Atlanta A11 .....5.30
Bessemer,Ala. T2 .....5.10
Clairton,Pa. U5 .....5.10
Claymont,Del. C22 ....5.10
Cleveland J5, R2 .....5.20
Coatesville,Pa. L7 ....5.10
Conshohocken,Pa. A3 ..5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fontana,Calif.(30) K1 ..5.90
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.10
GraniteCity,Ill. G4 .....5.20
Harrisburg,Pa. P4 ....5.10
Houston S5 .....5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Johnstown,Pa. B2 .....5.10
Lackawanna,N.Y. B2 ...5.10
LoneStar,Tex. L6 .....5.20
Mansfield,O. E6 .....5.10
Minnequa,Colo. C10 ....5.95
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Pittsburgh J5 .....5.10
Riverdale,Ill. A1 .....5.10
Seattle B3 .....6.00
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Sterling,Ill. N15 .....5.10
Steubenville,O. W10 ....5.10
Warren,O. R2 .....5.10
Youngstown U5, Y1 ....5.10

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....6.75
Fontana,Calif. K1 .....7.55
Geneva,Utah C11 .....6.75
Houston S5 .....6.85
Johnstown,Pa. B2 .....6.75
SparrowsPoint,Md. B2 ..6.75

PLATES, Wrought Iron
Economy,Pa. B14 .....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.625
Bessemer,Ala. T2 .....7.625
Cairton,Pa. U5 .....7.625
Claymont,Del. C22 .....7.625
Cleveland J5, R2 .....7.625
Coatesville,Pa. L7 .....7.625
Conshohocken,Pa. A3 ..7.625
Economy,Pa. B14 .....7.625
Ecorse,Mich. G5 .....7.625
Fairfield,Ala. T2 .....7.625
Farrell,Pa. S3 .....7.625
Fontana,Calif.(30) K1 8.425
Gary,Ind. U5 .....7.625
Geneva,Utah C11 .....7.625
Houston S5 .....7.725
Ind.Harbor,Ind. I-2, Y1.7.625
Johnstown,Pa. B2 .....7.625
Munhall,Pa. U5 .....7.625
Pittsburgh J5 .....7.625
Seattle B3 .....8.525
Sharon,Pa. S3 .....7.625
S.Chicago,Ill. U5, W14 .7.625
SparrowsPoint,Md. B2..7.625
Warren,O. R2 .....7.625
Youngstown U5 .....7.625

PLATES, ALLOY
Aliquippa,Pa. J5 .....7.20
Claymont,Del. C22 .....7.20
Coatesville,Pa. L7 .....7.20
Economy,Pa. B14 .....7.20
Fontana,Calif. K1 .....8.00
Gary,Ind. U5 .....7.20
Houston S5 .....7.30
Ind.Harbor,Ind. Y1 .....7.20
Johnstown,Pa. B2 .....7.20
Lowellville,O. S3 .....7.20
Munhall,Pa. U5 .....7.20
Newport,Ky. A2 .....7.20
Pittsburgh J5 .....7.20
Seattle B3 .....8.10
Sharon,Pa. S3 .....7.20
S.Chicago,Ill. U5, W14..7.20
SparrowsPoint,Md. B2 ..7.20
Youngstown Y1 .....7.20

FLOOR PLATES
Cleveland J5 .....6.175
Conshohocken,Pa. A3 ..6.175
Ind.Harbor,Ind. I-2 ..6.175
Munhall,Pa. U5 .....6.175
S.Chicago,Ill. U5 .....6.175

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.35
Ashland l.c.l.(15) A10..5.85
Cleveland c.l. R2 .....5.85
Warren,O. c.l. R2 .....5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ...5.425
Aliquippa,Pa.(9) J5 ...5.425
Alton,Ill. L1 .....5.625
Atlanta(9) A11 .....5.625
Bessemer,Ala.(9) T2 ...5.425
Birmingham(9) C15 ...5.425
Buffalo(9) R2 .....5.425
Clairton,Pa.(9) U5 ....5.425
Cleveland (9) R2 ....5.425
Ecorse,Mich.(9) G5 ....5.425
Emeryville,Calif. J7 ...6.175
Fairfield,Ala.(9) T2 ...5.425
Fairless,Pa.(9) U5 ....5.575
Fontana,Calif.(9) K1 ...6.125
Gary,Ind.(9) U5 ....5.425
Houston(9) S5 .....5.675
Ind.Harbor(9) I-2, Y1..5.425
Johnstown,Pa.(9) B2 ...5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo.(9) S5..6.675
Lackawanna(9) B2 ....5.425
LosAngeles(9) B3 .....6.125
Midland,Pa.(23) C18 ...5.725
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
N.T'wanda,N.Y.(23)B11 5.775
Owensboro,Ky.(9) G8 ..5.425
Pittsburg,Calif.(9) C11 .6.125
Pittsburgh(9) J5 ....5.425
Portland,Oreg. O4 ....6.175
Seattle B3, N14 .....6.175
S.Ch'c'go(9)R2,U5,W14 5.425
S.Duquesne,Pa.(9) U5..5.425
S.SanFran.,Calif.(9)B3 6.175
Sterling,Ill.(1)(9) N15..5.425
Sterling,Ill.(9) N15 ....5.525
Struthers,O.(9) Y1 ....5.425
Tonawanda,N.Y. B12 ...5.425
Torrance,Calif.(9) C11 .6.125
Youngstown(9)R2, U5..5.425

BARS, H.R. Leaded Alloy
(Including leaded extra)
Warren,O. C17 .....7.475

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.475
Bethlehem,Pa. B2 .....6.475
Bridgeport,Conn. C32 ...6.55
Buffalo R2 .....6.475
Canton,O. R2, T7 ....6.475
Clairton,Pa. U5 .....6.475
Detroit S41 .....6.475
Economy,Pa. B14 .....6.475
Ecorse,Mich. G5 .....6.475
Fairless,Pa. U5 .....6.625
Farrell,Pa. S3 .....6.475
Fontana,Calif. K1 ....7.525
Gary,Ind. U5 .....6.475
Houston S5 .....6.725
Ind.Harbor,Ind.I-2, Y1.6.475
Johnstown,Pa. B2 .....6.475
KansasCity,Mo. S5 ....6.725
Lackawanna,N.Y. B2 ...6.475
Lowellville,O. S3 .....6.475
LosAngeles B3 .....7.525
Massillon,O. R2, R8 ...6.475
Midland,Pa. C18 .....6.475
Owensboro,Ky. G8 .....6.475
Pittsburgh J5 .....6.475
Sharon,Pa. S3 .....6.475
S.Chicago R2, U5, W14 6.475
S.Duquesne,Pa. U5 ....6.475
Struthers,O. Y1 .....6.475
Warren,O. C17 .....6.475
Youngstown U5 .....6.475

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa, Pa. J5 ....7.925
Bessemer,Ala T2 .....7.925
Bethlehem,Pa. B2 .....7.925
Clairton,Pa. U5 .....7.925
Cleveland, R2 .....7.925
Ecorse,Mich. G5 .....7.925
Fairfield,Ala. T2 .....7.925
Fontana,Calif. K1 .....8.625
Gary,Ind. U5 .....7.925
Houston S5 .....8.175
Ind.Harbor,Ind. Y1 .....7.925
Johnstown,Pa. B2 .....7.925
KansasCity,Mo. S5 ....8.175
Lackawanna,N.Y. B2 ...7.925
LosAngeles B3 .....8.625
Pittsburgh J5 .....7.925
Seattle B3 .....8.675
S.Chicago,Ill. U5, W14..7.925
S.Duquesne,Pa. U5 ....7.925
S.SanFrancisco B3 ....8.675
Struthers,O. Y1 .....7.925
Youngstown U5 .....7.925

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ...5.575
Houston(9) S5 .....5.675
KansasCity,Mo.(9) S5..5.675
Lackawanna(9) B2 ....5.425
Sterling,Ill. N15 .....5.525
Sterling,Ill.(1) N15 ...5.425
Tonawanda,N.Y. B12 ...5.425

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....5.425
Atlanta A11 .....5.625
Joliet,Ill. P22 .....5.425
Niles,Calif. P1 .....6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 ....6.175
SanFrancisco S7 .....6.275
Seattle B3 .....6.175

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ~~....6.55~~ *6.475*
Clairton,Pa. U5 ~~.....6.55~~ *6.475*
Gary,Ind. U5 ~~.....6.55~~ *6.475*
Houston S5 ~~.....6.90~~ *6.725*
KansasCity,Mo. S5 ~~....6.80~~ *6.675*
Pittsburgh J5 .....6.55
Youngstown U5 .....6.55

BARS, C.F., Leaded Alloy
(Including leaded extra)
Ambridge,Pa. W18 ....9.925
BeaverFalls,Pa. M12 ..9.925
Camden,N.J. P13 .....10.10
Chicago W18 .....9.925
Cleveland C20 .....9.925*
Elyria,O. W8 .....9.925
LosAngeles P2, S30..11.40*
Monaca,Pa. S17 .....9.925
Newark,N.J. W18 ....10.10
SpringCity,Pa. K3 ....10.10
Warren,O. C17 .....9.925

*Grade A; add 0.50c for Grade B.

BARS, Cold-finished Carbon
Ambridge,Pa. W18 ....7.30
BeaverFalls,Pa. M12,R2 7.30
Birmingham C15 .....7.90
Buffalo B5 .....7.35
Camden,N.J. P13 .....7.75
Carnegie,Pa. C12 .....7.30
Chicago W18 .....7.30
Cleveland A7, C20 ....7.30
Detroit B5, P17 .....7.50
Detroit S41 .....7.30
Donora,Pa. A7 .....7.30
Elyria,O. W8 .....7.30
FranklinPark,Ill. N5 ...7.30
Gary,Ind. R2 .....7.30
GreenBay,Wis. F7 ....7.30
Hammond,Ind. J5, L2 ..7.30
Hartford,Conn. R2 ....7.80
Harvey,Ill. B5 .....7.30
LosAngeles(49) S30 ....8.75
LosAngeles P2, R2 ....8.75
Mansfield,Mass. B5 ....7.85
Massillon,O. R2, R8 ...7.30
Midland,Pa. C18 .....7.30
Monaca,Pa. S17 .....7.30
Newark,N.J. W18 .....7.75
NewCastle,Pa.(17) B4 ..7.30
Pittsburgh J5 .....7.30
Plymouth,Mich. P5 ....7.55
Putnam,Conn. W18 ....7.85
Readville,Mass. C14 ....7.85
S.Chicago,Ill. W14 ....7.30
SpringCity,Pa. K3 ....7.75
Struthers,O. Y1 .....7.30
Warren,O. C17 .....7.30
Willimantic,Conn. J5 ....7.80
Waukegan,Ill. A7 .....7.30
Youngstown F3, Y1 ....7.30

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....8.775
BeaverFalls,Pa. M12,R2 8.775
Bethlehem,Pa. B2 .....8.775
Bridgeport,Conn. C32 8.925
Buffalo B5 .....8.775
Camden,N.J. P13 .....8.95
Canton,O. T7 .....8.775
Carnegie,Pa. C12 .....8.775
Chicago W18 .....8.775
Cleveland A7, C20 ....8.775
Detroit B5, P17 .....8.975
Detroit S41 .....8.775
Donora,Pa. A7 .....8.775
Elyria,O. W8 .....8.775
FranklinPark,Ill. N5 ..8.775
Gary,Ind. R2 .....8.775
GreenBay,Wis. F7 ....8.775
Hammond,Ind. J5, L2..8.775
Hartford,Conn. R2 ....9.075
Harvey,Ill. B5 .....8.775
Lackawanna,N.Y. B2 ...8.775
LosAngeles P2, S30 ...10.75
Mansfield,Mass. B5 ....9.075
Massillon,O. R2, R8 ...8.775
Midland,Pa. C18 .....8.775
Monaca,Pa. S17 .....8.775
Newark,N.J. W18 .....8.95
Plymouth,Mich. P5 ....8.975
S.Chicago,Ill. W14 ....8.775
SpringCity,Pa. K3 .....8.95
Struthers,O. Y1 .....8.775
Warren,O. C17 .....8.775
Waukegan,Ill. A7 .....8.775
Willimantic,Conn. J5 ....9.075
Worcester,Mass. A7 ....9.075
Youngstown F3, Y1 ....8.775

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.425
Atlanta A11 .....5.425
Birmingham C15 .....5.425
Buffalo R2 .....5.425
Cleveland R2 .....5.425
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ...6.175
Fairfield,Ala. T2 .....5.425
Fairless,Pa. U5 .....5.575
Fontana,Calif. K1 .....6.125
Ft.Worth,Tex.(4)(26)T4 5.875
Gary,Ind. U5 .....5.425
Houston S5 .....5.675
Ind.Harbor,Ind. I-2, Y1 5.425
Johnstown,Pa. B2 ....5.425
Joliet,Ill. P22 .....5.425
KansasCity,Mo. S5 ....5.675
Kokomo,Ind. C16 ....5.525
Lackawanna,N.Y. B2 ..5.425
LosAngeles B3 .....6.125
Milton,Pa. M18 .....5.575
Minnequa,Colo. C10 ...5.875
Niles,Calif. P1 .....6.125
Pittsburg,Calif. C11 ...6.125
Pittsburgh J5 .....5.425
Portland,Oreg. O4 .....6.175
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.175
S.Chicago,Ill. R2 .....5.425
S.Duquesne,Pa. U5 ....5.425
S.SanFrancisco B3 ....6.175
SparrowsPoint,Md. B2..5.425
Sterling,Ill.(1) N15 ...5.425
Sterling,Ill. N15 .....5.525
Struthers,O. Y1 .....5.425
Tonawanda,N.Y. B12 ..6.00
Torrance,Calif. C11 ...6.125
Youngstown R2, U5 ..5.425

BARS, Reinforcing (Fabricated; to Consumers)

Boston B2, U8 .....7.65
Chicago U8 .....6.91
Cleveland U8 .....6.89
Houston S5 .....7.35
Johnstown,Pa. B2 .....7.08
KansasCity,Mo. S5 ....7.35
Lackawanna,N.Y. B2 ...6.85
Marion,O. P11 .....6.70
Newark,N.J. U8 .....7.55
Philadelphia U8 .....7.38
Pittsburgh J5, U8 .....7.10
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.70
SparrowsPt.,Md. B2 ....7.08
St.Paul U8 .....7.92
Williamsport,Pa. S19 ..7.00

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 .18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.325
ChicagoHts.(4)(44) I-2 5.425
ChicagoHts.(4) C2 ....5.425
Franklin,Pa.(3) F5 ...5.325
Franklin,Pa.(4) F5 ....5.425
JerseyShore,Pa. (3) JS ..5.30
Marion,O.(3) P11 ....5.325
Tonawanda(3) B12 ....5.325
Tonawanda(4) B12 ....6.00
Williamsport,Pa.(3) S19 5.50

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..4.925
Allenport,Pa. P7 .....4.925
Ashland,Ky.(8) A10 ..4.925
Cleveland J5, R2 .....4.925
Conshohocken,Pa. A3 ..4.975
Detroit(8) M1 .....4.925
Ecorse,Mich. G5 .....4.925
Fairfield,Ala. T2 .....4.925
Fairless,Pa. U5 .....4.975
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Geneva,Utah C11 .....5.025
GraniteCity,Ill.(8) G4..5.025
Ind.Harbor,Ind. I-2, Y1 4.925
Irvin,Pa. U5 .....4.925
Lackawanna,N.Y. B2 ..4.925
Mansfield,O. E6 .....4.925
Munhall,Pa. U5 .....4.925
Newport,Ky.(8) A2 ....4.925
Niles,O. M21, S3 .....4.925
Pittsburg,Calif. C11 ...5.625
Pittsburgh J5 .....4.925
Portsmouth,O. P12 ....4.925
Riverdale,Ill. A1 .....4.925
Sharon,Pa. S3 .....4.925
S.Chicago,Ill. W14 ....4.925
SparrowsPoint,Md. B2..4.925
Steubenville,O. W10 ...4.925
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ...4.925
Youngstown U5, Y1 ...4.925

SHEETS, H.R. (19) Ga. & Lighter

Niles,O. M21 .....6.05

SHEETS, H.R. Alloy

Gary,Ind. U5 .....8.10
Ind.Harbor,Ind. Y1 ....8.10
Irvin,Pa. U5 .....8.10
Munhall,Pa. U5 .....8.10
Newport,Ky A2 .....8.10
Youngstown U5, Y1 ....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Cleveland J5, R2 .....7.275
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.275
Fairfield,Ala. T2 .....7.275
Fairless,Pa. U5 .....7.325
Farrell,Pa. S3 .....7.275
Fontana,Calif. K1 ....8.025
Gary,Ind. U5 .....7.275
Ind.Harbor,Ind. I-2, Y1 7.275
Irvin,Pa. U5 .....7.275
Lackawanna(35) B2 ..7.275
Munhall,Pa. U5 .....7.275
Pittsburgh J5 .....7.275
S.Chicago,Ill. U5, W14.7.275
Sharon,Pa. S3 .....7.275
SparrowsPoint(36) B2..7.275
Warren,O. R2 .....7.275
Weirton,W.Va. W6 ...7.275
Youngstown U5, Y1 ..7.275

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.675
Warren,O. R2 .....5.675

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....6.80
Middletown,O. A10 ....6.55
Warren,O. R2 .....6.80

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.05
Allenport,Pa. P7 .....6.05
Cleveland J5, R2 .....6.05
Conshohocken,Pa. A3 ..6.10
Detroit M1 .....6.05
Ecorse,Mich. G5 .....6.05
Fairfield,Ala. T2 .....6.05
Fairless,Pa. U5 .....6.10
Follansbee,W.Va. F4 ....6.05
Fontana,Calif. K1 .....7.30
Gary,Ind. U5 .....6.05
GraniteCity,Ill. G4 .....6.15
Ind.Harbor,Ind. I-2, Y1..6.05
Irvin,Pa. U5 .....6.05
Lackawanna,N.Y. B2 ...6.05
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....6.05
Newport,Ky. A2 .....6.05
Pittsburg,Calif. C11 ....7.00
Pittsburgh J5 .....6.05
Portsmouth,O. P12 ....6.05
SparrowsPoint,Md. B2 ..6.05
Steubenville,O. W10 ....6.05
Warren,O. R2 .....6.05
Weirton,W.Va. W6 ....6.05
Yorkville,O. W10 .....6.05
Youngstown Y1 .....6.05

SHEETS, Cold-Rolled, High-Strength, Low Alloy

Cleveland J5, R2 .....8.975
Ecorse,Mich. G5 .....8.975
Fairless,Pa. U5 .....9.025
Fontana,Calif. K1 ..10.275
Gary, Ind. U5 .....8.975
IndianaHarbor,Ind. Y1.8.975
Irvin,Pa. U5 .....8.975
Lackawanna(37) B2 ..8.975
Pittsburgh J5 .....8.975
SparrowsPoint(38) B2..8.975
Warren,O. R2 .....8.975
Weirton,W.Va. W6 ....8.975
Youngstown Y1 .....8.975

SHEETS, Culvert	Cu Steel	Cu Fe
Ashland,Ky. A10	.6.95	7.20
Canton,O. R2	....6.95	7.45
Fairfield T2	....6.95	7.20
Gary,Ind. U5	....6.95	7.20
GraniteCity,Ill. G4	7.05	...
Ind.Harbor I-2	..6.95	7.20
Irvin,Pa. U5	....6.95	7.20
Kokomo,Ind. C16	..7.05	...
MartinsFry. W10	6.95	7.20
Pitts.,Calif. C11	..7.70	...
Pittsburgh J5	....6.95	...
SparrowsPt. B2	..6.95	...

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ....7.20

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2..6.60†
Ashland,Ky. A10 .....6.60†
Canton,O. R2 .....6.60‡
Dover,O. E6 .....6.60†
Fairfield,Ala. T2 .....6.60†
Gary,Ind. U5 .....6.60†
GraniteCity,Ill. G4 ....6.70*
Ind.Harbor,Ind. I-2 ....6.60†
Irvin,Pa. U5 .....6.60†
Kokomo,Ind. C16 .....6.70‡
MartinsFerry,O. W10 ..6.60*
Middletown,O. A10 ....6.60†
Pittsburg,Calif. C11 ...7.35*
Pittsburgh J5 .....6.60†
SparrowsPt.,Md. B2 ..6.60†
Warren,O. R2 .....6.60†
Weirton,W.Va. W6 ....6.60*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....7.175

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....9.725
SparrowsPt.(39) B2 ..9.725

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.00
Irvin,Pa. U5 .....7.00

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 .....6.85
Middletown,O. A10 ....6.85

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.425
Niles,O.(28) R2 .....7.425
Youngstown J5 .....7.275
Weirton,W.Va. W6 ....7.275

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.25
Butler,Pa. A10 (type 2). 9.35

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.625
Cleveland R2 .....6.625
Fairfield,Ala. T2 .....6.625
Gary,Ind. U5 .....6.625
GraniteCity,Ill. G4 ....6.725
Ind.Harbor,Ind. I-2, Y1.6.625
Irvin,Pa. U5 .....6.625
Middletown,O. A10 ....6.625
Niles,O. M21, S3 ....6.625
Youngstown Y1 .....6.625

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.65
Ind.Harbor,Ind. I-2 ...8.475
Yorkville,O. W10 .....8.475

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10 7.00
Gary,Ind. U5 .....7.00
Mansfield,O. E6 .....7.00
Middletown,O. A10 ....7.00
Niles,O. M21, R2, S3 ..7.00
Weirton,W.Va. W6 ....7.00

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.40

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connor Steel Div., H. K. Porter Co. Inc
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless Steel Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..4.925
Allenport,Pa. P7 .....4.925
Alton,Ill. L1 .....5.125
Ashland,Ky.(8) A10 ...4.925
Atlanta A11 .....4.925
Bessemer,Ala. T2 .....4.925
Birmingham C15 .....4.925
Buffalo(27) R2 .....4.925
Conshohocken,Pa. A3 ..4.975
Detroit M1 .....5.025
Ecorse,Mich. G5 .....4.925
Fairfield,Ala. T2 .....4.925
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.925
Ind.Harbor,Ind. I-2, Y1.4.925
Johnstown,Pa.(25) B2..4.925
Lackaw'na,N.Y.(25) B2 4.925
LosAngeles(25) B3 ....5.675
Minnequa,Colo. C10 ...6.025
Riverdale,Ill. A1 .....4.925
SanFrancisco S7 .....6.35
Seattle(25) B3 .....5.925
Seattle N14 .....6.35
Sharon,Pa. S3 .....4.925
S.Chicago W14 .....4.925
S.SanFrancisco(25) B3.5.675
SparrowsPoint,Md. B2..4.925
Sterling,Ill.(1) N15 ....4.925
Sterling,Ill. N15 .....5.025
Torrance,Calif. C11 ...5.675
Warren,O. R2 .....4.925
Weirton,W.Va. W6 ....4.925
Youngstown U5 .....4.925

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 .....8.10
Farrell,Pa. S3 .....8.10
Gary,Ind. U5 .....8.10
Houston S5 .....8.35
Ind.Harbor,Ind. Y1 ....8.10
KansasCity,Mo. S5 ....8.35
LosAngeles B3 .....9.30
Lowellville,O. S3 .....8.10
Newport,Ky. A2 .....8.10
Sharon,Pa. A2, S3 .....8.10
S.Chicago,Ill. W14 .....8.10
Youngstown U5, Y1 ....8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Bessemer,Ala. T2 .....7.325
Conshohocken,Pa. A3 ..7.325
Ecorse,Mich. G5 .....7.325
Fairfield,Ala. T2 .....7.325
Farrell,Pa. S3 .....7.325
Gary,Ind. U5 .....7.325
Ind.Harbor,Ind. I-2, Y1 7.325
Lackawanna,N.Y. B2 ..7.325
LosAngeles(25) B3 ....8.075
Seattle(25) B3 .....8.325
Sharon,Pa. S3 .....7.325
S.Chicago,Ill. W14 .....7.325
S.SanFrancisco(25) B3 .8.075
SparrowsPoint,Md. B2..7.325
Warren,O. R2 .....7.325
Weirton,W.Va. W6 ....7.325
Youngstown U5, Y1 ...7.325

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...5.175
Warren,O. R2 .....5.675

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....7.15
Baltimore T6 .....7.15
Boston T6 .....7.15
Buffalo S40 .....7.15
Cleveland A7, J5 .....7.15
Dearborn,Mich. D3 ....7.15
Detroit D2, M1, P20 ....7.15
Dover,O. G6 .....7.15
Ecorse,Mich. G5 .....7.15
Evanston,Ill. M22 .....7.25
Follansbee,W.Va. F4 ...7.15
Fontana,Calif. K1 .....9.00
FranklinPark,Ill. T6 ...7.25
Ind.Harbor,Ind. Y1 ....7.15
Indianapolis J5 .....7.30
LosAngeles J5 .....9.05
LosAngeles C1 .....9.20
NewBedford,Mass. R10, .7.60
NewBritain,Conn. S15 ..7.60
NewCastle,Pa. B4, E5 ..7.15
NewHaven,Conn. D2 ...7.60
NewKensington,Pa. A6..7.15
Pawtucket,R.I. R3 ....7.80
Pawtucket,R.I. N8 .....7.70
Philadelphia P24 .....7.70
Pittsburgh J5 .....7.15
Riverdale,Ill. A1 .....7.25
Rome,N.Y.(32) R6 .....7.15
Sharon,Pa. S3 .....7.15
Trenton,N.J.(31) R5 ...8.60
Wallingford,Conn. W2 ..7.60
Warren,O. R2, T5 .....7.15
Weirton,W.Va. W6 .....7.15
Worcester,Mass. A7 ....7.70
Youngstown J5, Y1 ....7.15

STRIP, Cold-Rolled Alloy

Boston T6 .....15.40
Carnegie,Pa. S18 .....15.05
Cleveland A7 .....15.05
Dover,O. G6 .....15.05
Farrell,Pa. S3 .....15.05
FranklinPark,Ill. T6 ...15.05
Harrison,N.J. C18 ....15.05
Indianapolis J5 .....15.20
Lowellville,O. S3 .....15.05
Pawtucket,R.I. N8 ....15.40
Riverdale,Ill. A1 .....15.05
Sharon,Pa. S3 .....15.05
Worcester,Mass. A7 ...15.35
Youngstown J5 .....15.05

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.45
Dearborn,Mich. D3 ....10.60
Dover,O. G6 .....10.45
Ecorse,Mich. G5 .....10.50
Farrell,Pa. S3 .....10.50
Ind.Harbor,Ind. Y1 ...10.65
Sharon,Pa. S3 .....10.50
Warren,O. R2 .....10.45

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	...	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
NewYork W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	16.10	19.30
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	...	18.10	21.95	26.30
Buffalo W12	...	18.10	....	....
Fostoria,O. S1	...	18.30	22.15	....
FranklinPark,Ill. T6	...	18.45	22.30	26.65
Harrison,N.J. C18	...	18.10	21.95	26.30
New York W3	...	18.10	21.95	26.30
Palmer,Mass. W12	...	18.10	....	....
Trenton,N.J. R5	...	18.10	21.95	26.30
Worcester,Mass. A7, T6	...	18.10	21.95	26.30
Youngstown J5	...	18.45	22.30	26.65

SILICON STEEL

H.R. SHEETS(22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	....	11.80	12.90	13.95
Mansfield,O. E6	9.625	11.10	11.80	12.90	13.95
Newport,Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles,O. M21, S3	9.625	11.10	11.80	12.90	....
Vandergrift,Pa. U5	....	11.10	11.80	12.90	13.95
Warren,O. R2	9.625	11.10	11.80	12.90	....
Zanesville,O. A10	....	11.10	11.80	12.90	13.95

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.35	12.05	13.15	14.20
Brackenridge,Pa. A4	....	....	12.05	13.15	14.20
GraniteCity,Ill. G4	9.725*	10.95*	11.65*	12.75*	....
IndianaHarbor,Ind. I-2	9.625†	10.85*	11.55*	12.65*	....
Mansfield,O. E6	9.625*	11.35	12.05	13.15	14.20
Vandergrift,Pa. U5	9.625*	11.35	12.05	13.15	14.20
Warren,O. R2	9.625*	11.35	12.05	13.15	14.20
Zanesville,O. A10	....	11.35†	12.05	13.15	14.20
					Stator
Vandergrift,Pa. U5	....	....	....	....	7.85

H.R. SHEETS (22 Ga., cut lengths)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.00	15.55	16.05	17.10
Vandergrift,Pa. U5	15.00	15.55	16.05	17.10
Zanesville,O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	17.60	19.20	19.70	20.20	15.25††
Butler,Pa. A10	....	....	19.20	19.70	20.20	....
Vandergrift,Pa. U5	16.60	17.60	19.20	19.70	20.20	15.25**
Warren,O. R2	....	....	....	....	....	15.25‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. **Cut lengths, ¾-cent lower. ††Coils only.

Weirton,W.Va. W6 ....10.50
Youngstown Y1 .....10.65

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....7.90

STRIP, C.R. Electrogalvanized

Cleveland A7 .....7.15*
Dover,O. G6 .....7.15*
Evanston,Ill. M22 ....7.25*
Riverdale,Ill. A1 .....7.25*
Warren,O. B9, T5 ....7.15*
Worcester,Mass. A7 ...7.70*
Youngstown J5 .....7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3 .....7.275

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.65
Riverdale,Ill. A1 .....5.50
Sharon,Pa. S3 .....5.35
Youngstown J5 .....5.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Weirton,W.Va. W6	8.75	9.00	9.40
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif. K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va. W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$7.85
Fairfield,Ala. T2 .....7.95
Fairless,Pa. U5 .....7.95
Fontana,Calif. K1 .....8.60
Gary,Ind. U5 .....7.85
GraniteCity,Ill. G4 .....7.95
Ind.Harbor,Ind. I-2, Y1..7.85
Irvin,Pa. U5 .....7.85
Niles,O. R2 .....7.85
Pittsburg,Calif. C11 ....8.60
SparrowsPoint,Md. B2 ..7.95
Weirton,W.Va. W6 .....7.85
Yorkville,O. W10 .....7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5 .....$7.50
Gary,Ind. U5 .....7.50
GraniteCity,Ill. G4 .....7.60
Ind.Harbor,Ind. Y1 .....7.50
Irvin,Pa. U5 .....7.50
Yorkville,O. W10 .....7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5 .....$9.70
Irvin,Pa. U5 .....9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5 .....$11.25

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..7.65
Aliquippa,Pa. J5 .....7.65
Alton,Ill. L1 .....7.85
Atlanta A11 .....7.65
Bartonville,Ill. K4 .....7.75
Buffalo W12 .....7.65
Chicago W13 .....7.65
Cleveland A7, C20 .....7.65
Crawfordsville,Ind. M8..7.75
Donora,Pa. A7 .....7.65
Duluth A7 .....7.65
Fairfield,Ala. T2 .....7.65
Fostoria,O.(24) S1 .....7.75
Houston S5 .....7.90
Jacksonville,Fla. M8 ...8.00
Johnstown,Pa. B2 .....7.65
Joliet,Ill. A7 .....7.65
KansasCity,Mo. S5 .....7.90
Kokomo,Ind. C16 .....7.75
LosAngeles B3 .....8.60
Minnequa,Colo. C10 ....7.90
Monessen,Pa. P7, P16 ..7.65
N.Tonawanda,N.Y. B11 .7.65
Palmer,Mass. W12 .....7.95
Pittsburg,Calif. C11 ....8.60
Portsmouth,O. P12 .....7.65
Rankin,Pa. A7 .....7.65
S.Chicago,Ill. R2 .....7.65
S.SanFrancisco C10 ....8.60
SparrowsPoint,Md. B2 ..7.75
Sterling,Ill.(1) N15 ....7.65
Sterling,Ill. N15 .....7.75
Struthers,O. Y1 .....7.65
Waukegan,Ill. A7 .....7.65
Worcester,Mass. A7 ....7.95

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4 .....12.65
Buffalo W12 .....12.65
Cleveland A7 .....12.65
Donora,Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown,Pa. B2 .....12.65
Minnequa,Colo. C10 ...12.775
Monessen,Pa. P7, P16..12.65
Muncie,Ind. I-7 .....12.85
NewHaven,Conn. A7 ...12.95
Palmer,Mass. W12 .....12.95
Pittsburg,Calif. C11 ...13.45
Portsmouth,O. P12 .....12.65
Roebling,N.J. R5 .....12.95
SparrowsPt.,Md. B2 ..12.75
Struthers,O. Y1 .....12.65
Trenton,N.J. A7 .....12.95
Waukegan,Ill. A7 .....12.65
Worcester,Mass. A7 ...12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....9.30
Alton,Ill. L1 .....9.50
Buffalo W12 .....9.30
Cleveland A7 .....9.30
Donora,Pa. A7 .....9.30
Duluth A7 .....9.30
Johnstown,Pa. B2 .....9.30
KansasCity,Mo. S5 .....9.55
LosAngeles B3 .....10.25
Minnequa,Colo. C10 ....9.50
Monessen,Pa. P7, P16 ..9.30
NewHaven,Conn. A7 ...9.60
Palmer,Mass. W12 .....9.60
Pittsburg,Calif. C11 ...10.25
Portsmouth,O. P12 .....9.30
Roebling,N.J. R5 .....9.60
S.Chicago,Ill. R2 .....9.30
S.SanFrancisco C10 ....10.25
SparrowsPt.,Md. B2 ....9.40
Struthers,O. Y1 .....9.30
Trenton,N.J. A7 .....9.60
Waukegan,Ill. A7 .....9.30
Worcester,Mass. A7 ....9.60

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5 .....9.30
Alton,Ill. L1 .....9.50
Bartonville,Ill. K4 .....9.40
Buffalo W12 .....9.30
Cleveland A7 .....9.30
Donora,Pa. A7 .....9.30
Duluth A7 .....9.30
Fostoria,O. S1 .....9.35
Johnstown,Pa. B2 .....9.30
KansasCity,Mo. S5 .....9.55
LosAngeles B3 .....10.25
Milbury,Mass.(12) N6 ...9.60
Minnequa,Colo. C10 ....9.50
Monessen,Pa. P7, P16..9.30
Muncie,Ind. I-7 .....9.50
Palmer,Mass.(12) W12..9.60
Pittsburg,Calif. C11 ...10.25
Portsmouth,O. P12 .....9.30
Roebling,N.J. R5 .....9.60
S.Chicago,Ill. R2 .....9.30
S.SanFrancisco C10 ...10.25
SparrowsPt.,Md. B2 ....9.40
Struthers,O. Y1 .....9.30
Trenton,N.J. A7 .....9.60
Waukegan,Ill. A7 .....9.30
Worcester A7, J4, T6...9.60

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 .....15.80
Bartonville,Ill. K4 .....15.70
Buffalo W12 .....15.60
Chicago W13 .....15.60
Cleveland A7 .....15.60
Crawfordsville,Ind. M8..15.70
Fostoria,O. S1 .....15.60
Houston S5 .....15.85
Jacksonville,Fla. M8 ...15.95
Johnstown,Pa. B2 .....15.60
KansasCity,Mo. S5 .....15.85
Kokomo,Ind. C16 .....15.60
Minnequa,Colo. C10 ....15.85
Monessen,Pa. P16 .....15.60
Muncie,Ind. I-7 .....15.80
Palmer,Mass. W12 .....15.90
S.SanFrancisco C10 ...16.45
Waukegan,Ill. A7 .....15.60
Worcester,Mass. A7, T6 15.90

ROPE WIRE	(A)
Bartonville,Ill. K4	12.75
Buffalo W12	12.75
Fostoria,O. S1	12.75
Johnstown,Pa. B2	12.75
Monessen,Pa. P7	12.75
Muncie,Ind. I-7	12.95
Palmer,Mass. W12	13.05
Portsmouth,O. P12	12.75
Roebling,N.J. R5	13.05
SparrowsPt.,Md. B2	12.85
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Tire Bead

Bartonville,Ill. K4	16.55
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.05

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. MS	11.65
Dover,O. G6	11.65
Fostoria,O. S1	11.65
FranklinPark,Ill. T6	11.75
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee C23	11.85
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. NS	11.95
Philadelphia P24	11.95
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	11.95
Warren,O. B9	11.65
Worcester,Mass. A7, T6	11.95

NAILS, Stock

	Colo.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. MS	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. MS	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7	$9.10

NAILS, Cut (100 lb keg) To Dealers (33)

Conshohocken,Pa. A3	$9.80
Wheeling,W.Va. W10	9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. MS	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville Fla. MS	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburgh,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(Per 97 lb Net Box) Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. MS	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. MS	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. MS	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. MS	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill. (37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. MS	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. MS	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill. (37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. MS	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. MS	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	174

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198*
Bartonville,Ill. K4	198
Crawfordsville,Ind. MS	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. MS	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. MS	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. MS	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage) Stone

	An'ld Galv. Stone
Ala.City,Ala.R2	17.15 18.70**
Aliq'ppa,Pa. J5	17.15 18.95
Bartonville,Ill. K4	17.25 19.05
Cleveland A7	17.15 ....
Craw'dsville MS	17.25 19.05
Fostoria,O. S1	17.65 19.20†
Houston S5	17.40 18.95**
Jacksonville MS	17.25 19.05
Johnstown B2	17.15 18.95§
Kan.City,Mo. S5	17.40 ....
Kokomo C16	17.25 18.80†
Minnequa C10	17.40 18.95**
P'lm'r,Mass.W12	17.45 19.00†
Pitts.,Calif. C11	17.50 19.05†
SparrowsPt. B2	17.25 19.05§
Sterling(37)N15	17.25 19.05††
Waukegan A7	17.15 18.70†
Worcester A7	17.45 ....

WIRE, Merchant Quality

	An'ld Galv.
(6 to 8 gage)	
Ala.City,Ala. R2	8.65 9.20**
Aliquippa J5	8.65 9.325§
Atlanta(48) A11	8.75 9.425*
Bartonville(48) K4	8.75 9.425
Buffalo W12	8.65 9.20†
Cleveland A7	8.65 ....
Crawfordsville MS	8.75 9.425
Donora,Pa. A7	8.65 9.20†
Duluth A7	8.65 9.20†
Fairfield T2	8.65 9.20†
Houston(48) S5	8.90 9.45**
Jacks'ville,Fla. MS	8.75 9.425
Johnstown B2(48)	8.65 9.325§
Joliet,Ill. A7	8.65 9.20†
Kans.City(48) S5	8.90 9.45**
Kokomo C16	8.75 9.30†
LosAngeles B3	9.60 10.275§
Minnequa C10	8.90 9.45**
Monessen P7(48)	8.65 9.325§
Palmer,Mass. W12	8.95 9.50†
Pitts.Calif. C11	9.60 10.15†
Rankin,Pa. A7	8.65 9.20†
S.Chicago R2	8.65 9.20**
S.SanFran. C10	9.60 10.15**
Spar'wsPt.B2(48)	8.75 9.425§
Sterling(48) N15	8.90 9.575††
Sterling(1) (48)	8.80 9.475††
Struthers,O. Y1	8.65 9.30†
Worcester,Mass.A7	8.95 9.50†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, full container quantity, per cent off list, f.o.b. mill)

BOLTS

Carriage, Machine Bolts

Full Size Body (cut thread)

½ in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
⅝ in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1⅛ in. and larger:	
All lengths	35.0

Carriage, Machine, Lag Bolts Hot Galvanized:

½ in. and smaller:	
6 in. and shorter	29.0
Longer than 6 in.	15.0
⅝ in. and larger:	
All lengths	12.0

Lag Bolts (all diam.)

6 in. and shorter	49.0
Longer than 6 in.	39.0

Plow and Tap Bolts

½ in. and smaller by 6 in. and shorter	49.0
Larger than ½ in. or longer than 6 in.	39.0
Blank Bolts	39.0
Step, Elevator, Tire Bolts	49.0

Stove Bolts, Slotted:

⅛ to ¼ in. incl., 3 in. and shorter	55.0
⅛ to ½ in., inclusive	55.0

NUTS

Reg. & Heavy Square Nuts:

All sizes	55.5

Square Nuts, Reg. & Heavy, Hot Galvanized:

All sizes	41.0

Hex Nuts, Reg. & Heavy, Hot Pressed:

¾ in. and smaller	60.5
⅞ in. to 1 in., incl.	55.5
1⅛ in. to 1½ in., incl.	58.5
1⅝ in. and larger	53.5

Hex Nuts, Reg. & Heavy, Cold Punched:

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, All Types, Hot Galvanized:

¾ in. and smaller	46.5
⅞ in. to 1 in., incl.	41.5
1⅛ in. to 1½ in., incl.	46.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):

¾ in. and smaller	60.5
⅞ in. to 1½ in., incl.	55.5
1⅝ in. and larger	53.5

Hex Nuts, Finished (Incl. Slotted and Castellated):

1 in. and smaller	63.0
1⅛ in. to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):

⅝ in. and smaller	60.5
¾ in. to 1 in., incl.	63.0
1⅛ to 1½ in., incl.	59.0
1⅝ in. and larger	53.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or fine Thread, Bright:

6 in. and shorter:	
⅝ in. and smaller	40.0
¾ in. and 1 in. diam.	22.0
Longer than 6 in.:	
⅝ in. and smaller	8.0
¾ in. and 1 in. diam.	+ 6.0

High Carbon, Heat Treated:

6 in. and shorter:	
⅝ in. and smaller	26.0
¾ in. and 1 in. diam.	3.0
Longer than 6 in.:	
⅝ in. and smaller	+ 13.0
¾ in. and 1 in. diam.	+ 32.0

Flat Head Capscrews:

¾ in. and smaller	+ 76.0

Setscrews, Square Head, Cup Point, Coarse Thread:

Through 1 in. diam.:	
6 in. and shorter	Net
Longer than 6 in.	+ 23

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.25

7/8 in. under: List less 19%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	25.98	23.54
1¼	13	....	30.78	23.36
1½	13	29.03	34.01	25.83
1¾	13	34.29	40.18	30.51
2	13	38.44	45.05	34.20
2¼	13	43.29	50.75	38.52
2¼	12	46.99	55.06	41.81
2½	12	51.76	60.65	46.05
2¾	12	56.04	65.67	49.88
3	12	59.76	70.03	53.19

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60-lb Under
Rails				
Bessemer,Pa. U5	5.525	5.425	....	6.50
Ensley,Ala. T2	5.525	5.425	....	6.50
Fairfield,Ala. T2	....	....	....	6.50
Gary,Ind. U5	5.525	5.425	....	...
Huntington,W.Va. C15	....	....	....	6.50
IndianaHarbor,Ind. I-2	5.525	5.425	5.475	...
Johnstown,Pa. B2	....	....	....	(16)6.50
Lackawanna,N.Y. B2	5.525	5.425	....	6.50
Minnequa,Colo C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.525	5.425	....	...
Williamsport,Pa. S19	....	....	....	6.50

TIE PLATES

Fairfield,Ala. T2	6.60
Gary,Ind U5	6.60
Ind.Harbor,Ind. I-2	6.60
Lackawanna,N.Y. B2	6.60
Minnequa,Colo. C10	6.60
Seattle B3	6.75
Steelton,Pa. B2	6.60
Torrance,Calif. C11	6.75

JOINT BARS

Bessemer, Pa. U5	6.975
Fairfield,Ala. T2	6.975
Ind.Harbor,Ind. I-2	6.975
Joliet,Ill. U5	6.975
Lackawanna,N.Y. B2	6.975
Minnequa,Colo. C10	6.975
Steelton,Pa. B2	6.975

AXLES

Ind.Harbor,Ind. S13	8.775
Johnstown,Pa. B2	8.775

TRACK BOLTS, Untreated

Cleveland R2	14.75
KansasCity,Mo. S5	14.75
Lebanon,Pa. B2	14.75
Minnequa,Colo. C10	14.75
Pittsburgh P14	14.75
Seattle B3	15.25

SCREW SPIKES

Lebanon,Pa. B2	14.50

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind I-2, Y1	9.75
KansasCity,Mo. S5	9.75
Lebanon,Pa. B2	9.75
Minnequa,Colo. C10	9.75
Pittsburgh J5	9.75
Seattle B3	10.25
S.Chicago,Ill. R2	9.75
Struthers,O. Y1	9.75
Youngstown R2	9.75

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1¼ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) 3/8" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn. base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.15c, finer than 15 Ga.
(25) Bar mill bands.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.80c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 42" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.30c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
Lorain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Youngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Alton, Ill. L1	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Fairless, Pa. N3	....	....	....	....	....	....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Fontana, Calif. K1	....	....	....	....	....	....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
Lorain, O. N3	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Sparrows Pt., Md. B2	3.5	+23	+8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
Youngstown R2, Y1	....	....	....	....	....	....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	....	....	....	....
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	....	....	....	....
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	44.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	50.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	50.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	58.50	63.25	62.75
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75
308	39.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	92.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	84.50	89.25	88.50
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50
330	....	....	106.75	....	95.25	106.75	105.50	108.00	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
403	....	....	32.00	....	35.75	37.75	40.25	48.25	48.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	36.00	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	45.25	52.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	36.75	51.75	42.00
431	....	28.75	37.75	....	42.00	44.25	46.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	47.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steels Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates—Carbon Base 5%	10%	15%	20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	34.70	37.95	42.25	46.70	39.75
304L	36.90	40.55	45.10	49.85	....
316	40.35	44.50	49.50	54.50	58.25
316L	45.05	49.35	54.70	60.10	....
316 Cb	47.30	53.80	61.45	69.10	....
321	36.60	40.05	44.60	49.30	47.25
347	38.25	42.40	47.55	52.80	57.00
405	28.60	29.85	33.35	36.85	....
410	28.15	29.55	33.10	36.70	....
430	28.30	29.80	33.55	37.25	....
Inconel	48.00	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....
Copper*	....	....	....	....	46.00

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	33.10	38.75

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.305	Cr-Hot Work	0.475
Extra Carbon	0.360	W-Cr Hot Work	0.500
Special Carbon	0.475	V-Cr Hot Work	0.520
Oil Hardening	0.475	Hi-Carbon-Cr	0.925

Grade by Analysis (%) W	Cr	V	Co	Mo		$ per lb
20.25	4.25	1.6	12.25	....	....	4.285
18.25	4.25	1	4.75	....	....	2.500
18	4	2	9	....	....	2.870
18	4	2	....	....	....	1.960
18	4	1	....	....	....	1.795
9	3.5	....	....	....	....	1.395
13.5	4	3	....	....	....	2.060
13.75	3.75	2	5	....	....	2.440
6.4	4.5	1.9	....	5	....	1.300
6	4	3	....	6	....	1.545
1.5	4	1	....	8.5	....	1.155

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood, Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	74.00
Philadelphia, deld.	82.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59‡	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.28	8.88	9.68	....	8.76	9.06	11.34#	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	11.07	....	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	53.50	9.42	9.73	12.90#	15.28	9.63	9.72	11.20
Buffalo	8.25	9.00	11.07	55.98	8.50	8.80	11.00#	15.00	8.90	8.90	10.45
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.10	52.43	8.54	8.92	11.06	14.86	9.18	8.93	10.21
Cleveland	8.18	9.45	10.20	52.33	8.33	8.69	10.80#	14.74	9.01	8.79	10.11
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	9.00	9.45	10.70
Denver	9.38	11.75	....	....	9.41	9.78	11.10	....	7.65	8.45	9.70
Detroit	8.13	9.70	10.45	56.50	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95[10]	....	8.50	8.75	9.05[10]	....	9.00	8.85	10.10
Houston	7.10	8.40	8.45	54.32	7.25	7.20	11.10	13.50	7.25	8.05	9.30
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.45	9.40	11.80	57.60	8.90	8.75	12.10	16.10	8.70	8.85	11.00
Memphis, Tenn.	8.55	9.80	....	....	8.60	8.97	11.96#	....	9.01	8.93	10.56
Milwaukee	8.33	9.58	10.23	....	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.31	9.57	12.76#	15.09	9.35	9.43	10.66
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	8.90	9.92	52.69	8.70	8.65	11.51#	15.01	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.33	8.60	10.80#	14.65	8.64	8.56	9.88
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45	9.70	13.00#	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.05	16.35	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡over 4 in.; §§over 3 in.; #1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [3]—400 to 9999 lb; [5]—1000 to 1999 lb; [8]—2000 to 3999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchins, Haideman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $135; Salina, Pa., $140; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $175; Stevens Pottery, Ga., $185; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $150; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $155; E. Chicago, Ind., Joliet, Rockdale, Ill., $160; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $160; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 Per Cent: St. Louis, Mexico, Vandalia, Mo., $235; Danville, Ill., $238; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $245.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $298; Clearfield, Orviston, Snow Shoe, Pa., $305; Philadelphia, $310.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $338; Clearfield, Orviston, Snow Shoe, Pa., $345; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ¾ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$11; 70%, $36-$40; 60% $33-$36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $30-$33, contract; Mexican, all rail, duty paid, $25; barge, Brownvills, Tex., $27.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	25.00-27.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom.
Brazilian iron ore, 68.5%	14.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$9.50-10.00
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included), $134.40 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$46.00-48.00
48% 2.8:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

48% no ratio	$32.00-34.00
44% no ratio	24.00-25.00

Turkish

48% 3:1	$51.00-55.00

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-2.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over..	10.50
F.o.b. Riverton or Camden, N. J., west of Mississippi River.	9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh).	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 500-lb drum, freight allowed Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	30.30-45.70†
Bronze, 5000-lb lots	45.70-49.80†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	47.80-52.60†
Phosphor-Copper, 5000-lb lots	57.80
Copper (atomized) 5000-lb lots	38.30-46.80†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	44.50*
Zinc, 5000-lb lots	17.50-30.70‡

Tungsten:	Dollars
Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5¼	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $1.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.	

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.30	$5.30	$5.30	$5.50
Bar Size Angles	5.05	5.05	5.05	5.42
Structural Angles	5.05	5.05	5.05	5.42
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.07	6.07	6.07	6.43
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.02	8.02	7.92	8.20

†Per 82 lb. net reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton; $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, SM x D, 21.25c, per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅛" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 14.20c per lb of contained Si. Packed c.l. 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 22.00c per lb of Si. Packed, c.l. 23.65c, ton lot 24.95c, less ton 25.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c, for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delievered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3⅝ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l. packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of containd Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy; ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c; less than 2000 lb 21c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carload, f.o.b. sellers' works. Mt. Pleasant, Siglo, Tenn., $110 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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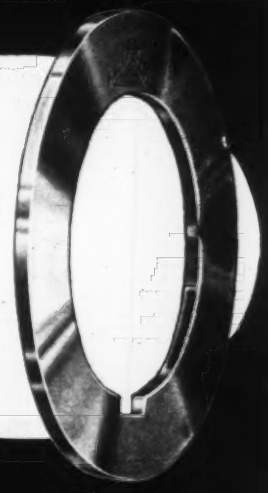

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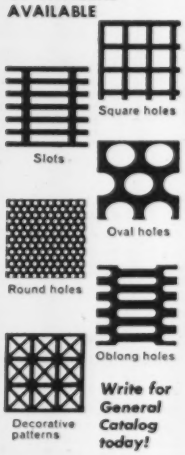

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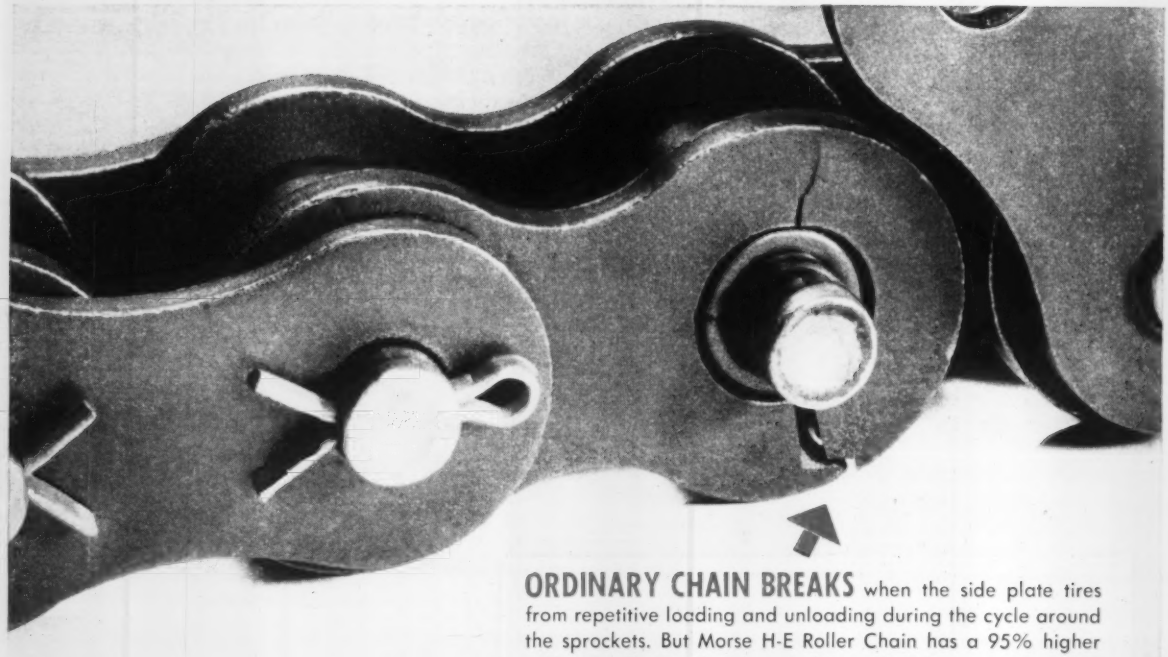

ORDINARY CHAIN BREAKS when the side plate tires from repetitive loading and unloading during the cycle around the sprockets. But Morse H-E Roller Chain has a 95% higher endurance limit and outlasts ordinary chain by up to 5 to 1.

"Tired Metal"... the bane of chain now licked by MORSE H-E

Morse H-E Roller Chain has up to 500% longer service life . . . cuts replacement and labor costs

The unretouched photograph shows what happens to chain when the metal fatigues. But now a special Morse process has licked the "tired metal" problem. It gives Morse H-E Roller Chain 95% higher endurance limit . . . and up to 500% longer service life.

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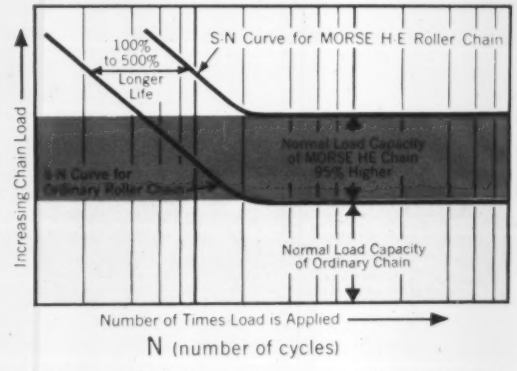
Chain Life: Morse High Endurance vs. Ordinary Roller Chain


100% to 500% Longer Life
S-N Curve for MORSE H-E Roller Chain
Normal Load Capacity of MORSE HE Chain 95% Higher
S-N Curve for Ordinary Roller Chain
Normal Load Capacity of Ordinary Chain
S (stress) Increasing Chain Load
Number of Times Load is Applied
N (number of cycles)

Red area: Under these chain loads, fatigue will break ordinary chain . . . but *not* Morse H-E.

White area: Under these loads, fatigue will break ordinary chain and Morse H-E . . . but Morse H-E will have operated 100% to 500% longer.

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THE TOUGH JOBS COME TO

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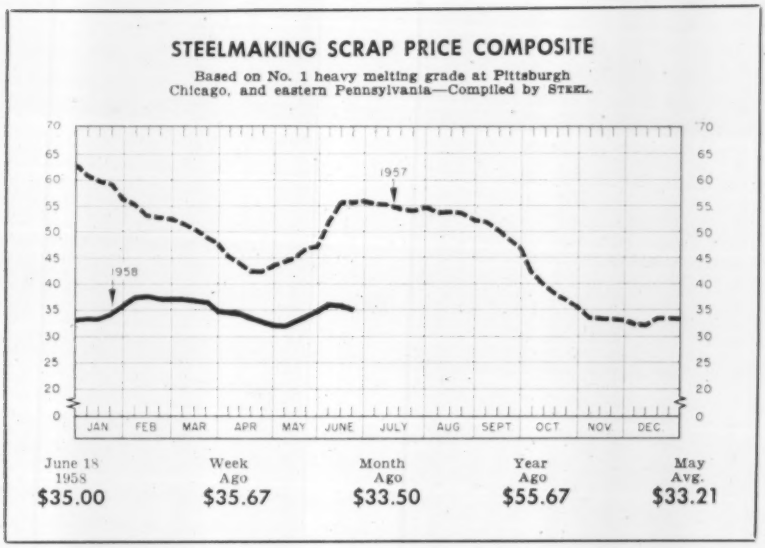
REMEMBER: Only Morse offers you all four of these basic drives: Roller Chain, Silent Chain, Hy-Vo*, and "Timing"® Belts.


STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
June 18 1958 $35.00
Week Ago $35.67
Month Ago $33.50
Year Ago $55.67
May Avg. $33.21

Scrap Sags as It Loses Punch

Market continues to fall despite rising steelmaking operations. STEEL's composite is off another 67 cents, now standing at $35. Summer slump anticipated

Scrap Prices, Page 148

Chicago—The tone in this market is softer although only a few grades have moved at lower prices, and the reductions amount to only $1 to $2 a ton. A mill that had announced $39 as its June buying price for industrial No. 1 heavy melting steel, dropped the figure to $37 to match what another mill paid for the same grade.

Philadelphia — The local scrap market is easy, but there is little change in prices. Prime grades of open hearth material appear to be holding at $34, delivered, on light trading. They had been quoted at $34-$35. No. 2 heavy melting is quoted down $1 at $30. All other grades are unchanged, with some prices nominal.

New York—Brokers' buying prices are unchanged. In the case of borings and turnings, they are nominal because trading is at a standstill. Domestic and foreign scrap business is quiet.

Boston—Scrap prices are unchanged here with buying and shipments light. Export demand is slow. The tonnage moving to eastern Pennsylvania (freight $10.79, including tax) is small. Foundries are buying little cast iron. Their melt is not over 50 per cent of capacity.

Pittsburgh—Despite higher steelmaking operations here, mills haven't increased scrap purchases. Prices have been stabilized, and trading is at a virtual standstill.

Stainless scrap is quoted slightly higher, 18-8 turnings being $105 a ton, and 18-8 bundles and solids $185.

Cleveland — Although steelmaking operations here are rising, going up 5 points last week to 48 per cent of capacity, the scrap market continues inactive. Traders anticipate a slow market this summer.

Buffalo — Prospects for a scrap price advance this month have about vanished. A quiet market is anticipated in July and August because of slower production at steel mills and foundries.

Detroit—Scrap dealers here are discouraged by the expectation there will be little demand for material through July. There is no buying activity now, and it appears that auto builders will not meet the tonnages they listed last month. Some scrapmen think auto tonnage will fall 25 to 40 per cent shy of last month's total.

Cincinnati — The scrap market here is unsettled, prices appear to be pointing downward. The secondary grades are off $1 to $2 a ton in the absence of buying support. No. 2 heavy melting is down $1, brokers offering $27.50-$28.50. No. 2 bundles at $22-$23 are down $2. Plant shutdowns next month will cut scrap generation sharply.

Washington — The Institute of Scrap Iron & Steel Inc. is urging the Interstate Commerce Commission to suspend the flat 40 cents per net or gross ton increase on freight rates granted the railroads in February. It filed statements pointing out the railroads are losing scrap traffic to other forms of transportation as a result of the freight rate hike.

Railroads hauling scrap intrastate in Indiana will not be allowed to increase freight rates by the flat 40 cents per ton they had requested, reports the Institute of Scrap Iron & Steel Inc. The Indiana Public Service Commission ruled the roads can increase 3 per cent with a maximum of 20 cents.

St. Louis—There is little activity in the scrap market here. A few cast iron items are quoted higher—No. 1 cupola at $41 and stove plates at $39, up $1 a ton. Mills hold substantial inventories.

Birmingham — The scrap market is holding with most consumers staying on the sidelines. Prices are steady and brokers are divided in their views as to whether buyers will up their offering quotations when they return to the market.

Houston—Only token support has been given the scrap market here so far this month—a small mill order and minor buying for future

(*Please turn to Page 153*)

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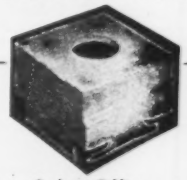

Sales Office
132 S. Whitfield St.
PITTSBURGH 6, PA. EM: 2-0614

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, June 18, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

June 18	$35.00
June 11	35.67
May Avg.	33.21
June 1957	54.89
June 1953	40.50

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	30.00-31.00
No. 1 dealer bundles	35.00-36.00
No. 2 bundles	25.00-26.00
No. 1 busheling	35.00-36.00
No. 1 factory bundles	40.00-41.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	14.00-15.00
Short shovel turnings	18.00-19.00
Cast iron borings	18.00-19.00
Cut structurals:	
2 ft and under	39.00-40.00
3 ft lengths	37.00-38.00
Heavy turnings	30.00-31.00
Punchings & plate scrap	39.00-40.00
Electric furnace bundles	37.00-38.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Stove plate	40.00-41.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	40.00-41.00
Drop broken machinery	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	40.00-41.00
Rails, 2 ft and under	53.00-54.00
Rails, 18 in. and under	54.00-55.00
Random rails	50.00-51.00
Railroad specialties	44.00-45.00
Angles, splice bars	47.00-48.00
Rails, rerolling	55.00-56.00

Stainless Steel Scrap

18-8 bundles & solids	*180.00-185.00*
18-8 turnings	*100.00-105.00*
430 bundles & solids	*100.00-105.00*
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt., indus.	*36.00-37.00*
No. 1 hvy melt., dealer	*34.00-35.00*
No. 2 heavy melting	31.00-32.00
No. 1 factory bundles	39.00-40.00
No. 1 dealer bundles	36.00-37.00
No. 2 bundles	25.00-26.00
No. 1 busheling, indus.	*36.00-37.00*
No. 1 busheling, dealer	*34.00-35.00*
Machine shop turnings	18.00-19.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut structurals, 3 ft	*39.00-40.00*
Punchings & plate scrap	*40.00-41.00*

Cast Iron Grades

No. 1 cupola	41.00-42.00
Stove plate	37.00-38.00
Unstripped motor blocks	33.00-34.00
Clean auto cast	46.00-47.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	*38.00-39.00*
R.R. malleable	50.00-51.00
Rails, 2 ft and under	*51.00-52.00*
Rails, 18 in. and under	*52.00-53.00*
Angles, splice bars	*47.00-48.00*
Axles	57.00-58.00
Rails, rerolling	*52.00-53.00*

Stainless Steel Scrap

18-8 bundles & solids	*170.00-175.00*
18-8 turnings	*95.00-100.00*
430 bundles & solids	*95.00-100.00*
430 turnings	50.00-55.00

YOUNGSTOWN

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	22.00-23.00
No. 1 busheling	36.00-37.00
No. 1 bundles	36.00-37.00
No. 2 bundles	21.00-22.00
Machine shop turnings	9.00-10.00
Short shovel turnings	13.00-14.00
Cast iron borings	13.00-14.00
Low phos.	34.00-35.00
Electric furnace bundles	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00

CLEVELAND

No. 1 heavy melting	32.50-33.50
No. 2 heavy melting	19.00-20.00
No. 1 factory bundles	34.00-35.00
No. 1 bundles	32.50-33.50
No. 2 bundles	20.00-21.00
No. 1 busheling	32.50-33.50
Machine shop turnings	7.00-8.00
Short shovel turnings	11.00-12.00
Mixed borings, turnings	11.00-12.00
Cast iron borings	11.00-12.00
Cut foundry steel	37.00-38.00
Cut structurals, plates 2 ft and under	39.00-40.00
Low phos. punchings & plate	30.00-31.00
Alloy-free, short shovel turnings	16.00-17.00
Electric furnace bundles	33.50-34.50

Cast Iron Grades

No. 1 cupola	42.00-43.00
Charging box cast	33.00-34.00
Heavy breakable cast	33.00-34.00
Stove plate	43.00-44.00
Unstripped motor blocks	25.00-26.00
Brake shoes	33.00-34.00
Clean auto cast	42.00-43.00
Burnt cast	30.00-31.00
Drop broken machinery	47.00-48.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Rails, random lengths	49.00-50.00
Cast steel	44.00-45.00
Railroad specialties	47.00-48.00
Uncut tires	40.00-41.00
Angles, splice bars	46.00-47.00
Rails, rerolling	51.00-52.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	160.00-165.00
18-8 turnings	90.00-95.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	33.00
No. 2 heavy melting	30.00
No. 1 bundles	34.00
No. 2 bundles	23.00
No. 1 busheling	33.00
Machine shop turnings	16.00†
Short shovel turnings	18.00†

Cast Iron Grades

No. 1 cupola	*41.00*
Charging box cast	33.00
Heavy breakable cast	33.00
Unstripped motor blocks	34.00
Clean auto cast	44.00
Stove plate	*39.00*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00
Rails, 18 in. and under	48.00
Rails, random lengths	45.00
Rails, rerolling	55.00
Angles, splice bars	44.00

BIRMINGHAM

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	30.00-31.00
No. 2 bundles	19.00-20.00
No. 1 busheling	30.00-31.00
Cast iron borings	12.00-13.00
Machine shop turnings	20.00-21.00
Short shovel turnings	21.00-22.00
Bar crops and plates	37.00-38.00
Structurals & plates	36.00-37.00
Electric furnace bundles	34.00-35.00
Electric furnace:	
2 ft and under	33.00-34.00
3 ft and under	32.00-33.00

Cast Iron Grades

No. 1 cupola	49.00-50.00
Stove plate	49.00-50.00
Unstripped motor blocks	38.00-39.00
Charging box cast	22.00-23.00
No. 1 wheels	34.00-35.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-34.00
Rails, 18 in. and under	47.00-48.00
Rails, rerolling	46.00-47.00
Rails, random lengths	43.00-44.00
Angles, splice bars	39.00-40.00

PHILADELPHIA

No. 1 heavy melting	*34.00*
No. 2 heavy melting	*30.00*
No. 1 bundles	34.00-35.00
No. 2 bundles	24.00
No. 1 busheling	34.00-35.00
Electric furnace bundles	36.00
Mixed borings, turnings	16.00†
Short shovel turnings	18.00
Machine shop turnings	15.00
Heavy turnings	29.00
Structural & plate	39.00-40.00
Couplers, springs, wheels	43.50
Rail crops, 2 ft & under	56.00-58.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	40.00
Malleable	58.00-59.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	16.00-17.00
Machine shop turnings	8.00-9.00†
Mixed borings, turnings	9.00-10.00†
Short shovel turnings	11.00-12.00†
Low phos (structurals & plates)	33.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	*145.00-150.00*
18-8 borings, turnings	45.00-50.00
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	60.00-65.00

BUFFALO

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	26.00-27.00
No. 2 bundles	20.00-21.00
No. 1 busheling	26.00-27.00
Mixed borings, turnings	13.00-14.00
Machine shop turnings	10.00-11.00
Short shovel turnings	14.00-15.00
Cast iron borings	13.00-14.00
Low phos. structurals and plate, 5 ft and under	31.00-32.00
2 ft and under	35.00-36.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	39.00-40.00
No. 1 machinery	43.00-44.00

Railroad Scrap

Rails, random lengths	45.00-46.00
Rails, 3 ft and under	51.00-52.00
Railroad specialties	35.00-36.00

CINCINNATI

(Buyers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	*27.50-28.50*
No. 1 bundles	34.00-35.00
No. 2 bundles	*22.00-23.00*
No. 1 busheling	34.00-35.00
Machine shop turnings	11.50-12.50
Mixed borings, turnings	11.50-12.50
Short shovel turnings	13.50-14.50
Cast iron borings	11.50-12.50
Low phos. 18 in.	39.00-40.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Heavy breakable cast	32.00-33.00
Charging box cast	32.00-33.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 18 in. and under	52.00-53.00
Rails, random lengths	43.00-44.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	32.00
No. 2 bundles	21.00*
Machine shop turnings	14.00
Short shovel turnings	17.00
Low phos. plates, structurals	36.00*

Cast Iron Grades

No. 1 cupola	*40.00*
Heavy breakable	30.00†
Unstripped motor blocks	*35.00*

Railroad Scrap

No. 1 R.R. heavy melt.	34.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	23.00-24.00
No. 2 heavy melting	18.00-19.00
No. 1 bundles	23.00-24.00
No. 2 bundles	14.00-15.00
No. 1 busheling	23.00-24.00
Machine shop turnings	5.00-6.00
Mixed borings, turnings	5.00-6.00
Short shovel turnings	7.00-8.00
No. 1 cast	28.00-29.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	31.00-32.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*26.00-27.00*
No. 2 heavy melting	19.00-21.00
No. 1 bundles	*27.00-28.00*
No. 2 bundles	18.00-19.00
No. 1 busheling	*26.00-27.00*
Machine shop turnings	8.00-9.00
Mixed borings, turnings	9.00-10.00
Short shovel turnings	10.00-11.00
Punchings & plate	31.00-32.00

Cast Iron Grades

No. 1 cupola	*34.00-35.00*
Stove plate	27.00-28.00
Charging box cast	26.00-27.00
Heavy breakable	24.00-25.00
Unstripped motor blocks	*14.00-15.00*
Clean auto cast	*35.00-36.00*

SEATTLE

No. 1 heavy melting	27.00†
No. 2 heavy melting	25.00†
No. 1 bundles	21.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00

Cast Iron Grades

No. 1 cupola	31.00
Heavy breakable cast	28.00
Unstripped motor blocks	23.00
Stove plate (f.o.b. plant)	21.00

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	20.00
Machine shop turnings	11.00
Shoveling turnings	11.00
Cast iron borings	11.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	41.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory:	
Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

†Nominal.
‡F.o.b. Hamilton, Ont.

LOGEMANN *presents*

the new giant triple-compression 4000-P Series of

SCRAP PRESSES

The bales shown, left to right, comprise 1660 lbs. of bulky miscellaneous scrap, two pre-burned, stripped automobile bodies weighing 1900 lbs., two smaller pre-burned, stripped bodies weighing 1740 lbs., one large unburned body with frame, axles, etc., weighing 2280 lbs., and another unburned lighter body with frame, axles, etc., weighing 2020 lbs.

- **Bale Densities are Extremely High!**
- **Giant Press Box is 20 ft. x 7 ft. x 5 ft.**
- **Two 150 HP Pumps Generate Hydraulic Pressure**

In this Logemann Scrap Press compressed bales measure 24 inches by 24 inches by a variable third dimension which is determined by the character and quantity of scrap charged. The first or gathering ram compresses the load of scrap from 20 ft. to 2 ft. . . . the intermediate side ram reduces the cross-dimension from 7 ft to 2 ft. . . . finally the third or finishing ram moves upward, to compress the vertical dimension into an extremely dense bale, ready for remelting. The cover is then withdrawn and the finishing ram elevates the compressed bale level with the top of the box, to allow the cover to push it off for loading into cars.

Two large 150 HP pumps generate hydraulic pressure for operating the press-rams at high pressures. Three smaller pumps are used to operate the press cover and the loading hopper. This hopper can be filled with miscellaneous scrap while the press is making a bale, and then dumped quickly into the box as soon as the preceding bale has been discharged.

The large pumps give rapid movement to all rams, and to handle their fluid delivery the operating-valves are proportionately over-size. These valves are operated by compressed air and easily controlled from a remote stand, through a bank of electrical switches and push-buttons, in front of the operator.

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We are prepared to build many smaller sizes or larger, if required, to meet your specific requirements. You are invited to present your problem for discussion.

Write for details about the newly developed 3500-P series with tamping cover and side bale ejection and the new giant double compression press with box 20 ft. long, 7½ ft. wide, and 5 ft. deep.

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Price of Copper Goes Up

Move marks the first advance in primary since 1956. Custom smelters match primary; more hikes likely. Aluminum steps up penetration into packaging

Nonferrous Metal Prices, Pages 152 & 153

ANACONDA CO. took a look at increasing strength in the copper market and boosted its quotation on June 17 by 1.5 cents a pound to 26.5 cents. Other primary producers are expected to follow.

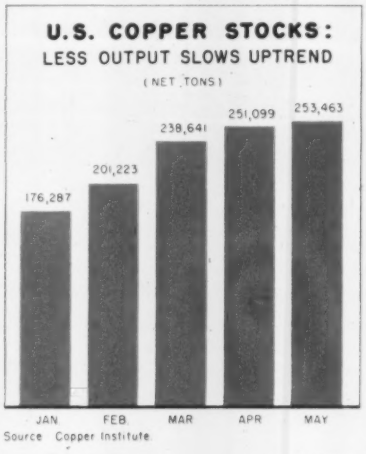
Custom smelters countered by matching the price. The merry-go-round probably isn't over—look for custom smelters to bump quotations another 0.5 to 1 cent.

This marks the first change in the primary price since Jan. 13 and the first increase since 1956. The downtrend started July 10, 1956, when the price was cut from 46 to 40 cents a pound.

Sales Not Reason—Anaconda's move was based on market factors other than greater demand. Proof: Primary sales have been some better lately but not enough to justify a hike. Statistically, the industry only stayed even in May. Output of both U. S. crude and refined fell, indicating more production curtailments are beginning to be felt. Shipments dropped about 3000 tons; stocks went up around 2000 tons (see chart).

Mainly Responsible—Four factors sparked the move: 1. The Seaton proposal (now before Congress) to authorize stockpiling of 150,000 tons of domestically produced copper next year at 27.5 cents a pound. 2. A 1.7 cent a pound tariff scheduled to come into effect July 1. 3. A strengthening in foreign quotations—the London Metal Exchange price had climbed to around 25.5 cents a pound before Anaconda's action. Katanga Copper was up to 24.94 cents. 4. Custom smelters (stimulated by better sales and increased activity on the commodity exchange) had increased prices to 26 cents a pound, 1 cent above the producer level (see STEEL, June 16, p. 155).

Outlook—Copper is definitely unstable. The probability that the industry will get Congressional help rules out any early price weakness. Prediction: Adoption of the stockpile proposal will boost prices at least 0.5 cent a pound, probably higher.



Package Uses Gain

Aluminum people are eyeing packaging as a top priority market for their expanding production.

Forecast — Aluminum Co. of America estimates that by 1965 packaging will annually take 230,000 tons of primary aluminum, over one-fourth of the total 1957 domestic output. In 1955, 84,000 tons went into packaging.

The industry's prime market is foil containers, but it's not overlooking the 43.5-billion-unit annual market for rigid wall cans, says C. H. Buckley, general manager, Container Div., Kaiser Aluminum & Chemical Corp.

Foil containers also are expected to boom. The market accounted for 49,000 tons of foil in 1957 and should use around 52,000 tons this year. Paul Murphy, general manager of packaging sales, Reynolds Metals Co., points out these potentials: 1. The $1 billion a year folding carton market (a major soap powder is experimentally packaged in aluminum foil). 2. The $250 million yearly bread wrapper market. 3. Fluid milk containers. 4. Cook-in pouches for frozen foods. 5. Wrappings for bacon and packaged meats (1.5 billion packages of bacon are sold annually in the U. S.). 6. Containers for vending machine products.

Number 1 Target — Companies are concentrating on the food industry. Alcoa has a portable, laminated foil "icebox" said to compare favorably with conventional metal coolers. Companies are stepping up efforts to crack the precooked and "exotic" food market. Here's why this market should grow, says Mr. Murphy: 1. People are eating better food (between 1950 and 1956 there was a 26 per cent increase in per capita food sales). 2. People can afford better food—over 50 per cent of all American families earned $5000 or more in 1957, compared with 17 per cent in 1949. 3. More wives are working today (30 per cent in 1957, vs. 21 per cent in 1947) and have less time to prepare meals.

NONFERROUS PRICE RECORD

	Price June 18	Last Change	Previous Price	May Avg	Apr. Avg	June, 1957 Avg
Aluminum	24.00	Apr. 1, 1958	26.00	24.000	24.000	27.100
Copper	25.00–26.50	June 17, 1958	25.00–26.00	24.433	24.323	30.250
Lead	10.80	June 3, 1958	11.80	11.512	11.800	14.120
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	95.00	June 18, 1958	94.875	94.510	93.021	98.080
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	10.840

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

"WE LICKED OUR ANODIZING MIST AND SPRAY THE EASY WAY . . ."

ROBERT A. NYQUIST, CHIEF CHEMIST
THE ELECTRIC AUTO-LITE COMPANY
BAY MANUFACTURING DIVISION
BAY CITY, MICHIGAN

"In our aluminum anodizing operation, we were encountering excessive gassing from our 15-18% sulphuric acid solutions.* In addition, we were getting a severe sulphate build-up on our lead cathodes and copper bus which was hindering our current carrying capacities. We couldn't control this problem even with our push-pull ventilation, so we began looking about for an effective method of suppression. And we found it!

"With the addition of just *one pound* of Udylite 'Zero-Mist' per 1,000 gallons of anodizing solution, we now control sulphuric mist and hold the spray down to 2-3 inches from top of the solutions. This was checked by saturating filter papers with alkaline phenolpthalein solution and suspending the papers at various levels before and after the addition of 'Zero-Mist' (see inset). The addition of 'Zero-Mist' made necessary by dragout is easily determined by visual and nasal observations. This easily maintained additive is our simple solution to an otherwise difficult processing problem."

Using Udylite 'Zero-Mist' in the anodizing operations such as the Electric Auto-Lite installation, is just one more application for the versatile 'Zero-Mist' family. Let your local Udylite representative demonstrate the many time and money saving advantages of 'Zero-Mist' at your convenience. Call him now, or write direct to:

*Zero-Mist has proven satisfactory in Chromic acid solutions also.

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Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.00; ingots, 26.10, 30,000 labor more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 27.90; No. 43, 27.70; No. 195, 28.70; No. 214, 29.50; No. 356, 27.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97-99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 25.00-26.50 deld.; custom smelters, 26.50; lake, 25.00-26.50 deld.; fire refined, 24.75-26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 10.80; chemical, 10.90; corroding, 10.90, St. Louis. New York basis, add

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. thick, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $228-230 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: $70-100 per troy oz nom.

Palladium: $19-21 per troy oz.

Platinum: $62-70 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 17.00, c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot, 95.00; prompt, 94.75.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced. 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.85.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.75; No. 2, 13.25; No. 5, 13.00 deld.

Zirconium: Sponge, commercial grade, $5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 24.00-24.50; No. 12 foundry alloy (No. 2 grade), 21.25-21.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.25; 13 alloy 0.60 Cu max., 24.00-24.25; 195 alloy, 24.25-25.50; 108 alloy, 21.75. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.25; grade 3, 20.00; grade 4, 17.25.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.80, f.o.b. Template, Pa.., or Reading, Pa.; rod, bar, wire, $1.78, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 30.355-31.855; l.c.l., 30.98-32.48. Weatherproof, 30,000-lb lots, 32.53-33.66. Magnet wire deld., 38.43-39.93, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.50 per cwt; pipe, full coils, $16.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, $24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H. R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.249-0.136	41.10-45.60	.....
0.135-0.096	41.60-46.70	.....
0.125-0.096	.....	38.50-39.10
0.095-0.077	42.30-48.50	38.60-39.30
0.076-0.061	42.90-50.80	38.80-40.00
0.060-0.048	43.60-53.10	39.40-41.10
0.047-0.038	44.20-55.90	39.90-32.50
0.037-0.030	44.60-60.90	40.30-44.30
0.029-0.024	45.20-52.70	40.60-45.00
0.023-0.019	46.20-56.10	41.70-43.40
0.018-0.017	47.00-53.40	42.30-44.00
0.016-0.015	47.90-54.30	43.10-44.80
0.014	48.90	44.10-45.80
0.013-0.012	50.10	44.80
0.011	51.10	46.00
0.010-0.0095	52.60	47.40
0.009-0.0085	53.90	48.90
0.008-0.0075	55.50	50.10
0.007	57.00	51.60
0.006	58.60	53.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	41.70	46.50
5050-F	42.80	47.60
3004-F	43.80	49.50
5052-F	44.40	50.20
6061-T6	44.90	51.00
2024-T4	48.60	55.40
7075-T6*	56.40	64.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T-4
Drawn				
0.125	76.20	73.20	....	....
0.156	64.20	61.40	....	....
0.172	....	61.40	....	....
0.188	64.20	61.40	....	79.60
0.203	64.20	61.40	....	....
0.219-0.234	61.00	59.50	....	....
0.250	61.00	59.50	88.40	75.90
0.266-0.281	61.00	59.50	....	....
0.313	61.00	59.50	81.40	72.20
0.344	60.50	....	81.40	....
Cold-Finished				
0.375-0.547	60.50	59.30	72.80	67.80
0.563-0.688	60.50	59.30	69.10	63.50
0.719	....	57.70	....	....
0.750-1.000	59.00	57.70	62.90	59.70
1.063	59.00	57.70	....	57.60
1.250-1.500	56.60	55.40	60.80	57.60
Rolled				
1.563	55.00	53.70	....	....
1.625-2.000	54.30	52.90	59.60	55.50
2.063	....	51.40	....	....
2.125-2.500	52.80	51.40	....	55.50
2.500-3.000	51.20	49.70	....	55.50
3.250-3.375	....	49.70	....	....

Forging Stock: Round, Class 1, random lengths, diam. 0.688-8 in., "F" temper; 2014, 41.50-54.30; 6061, 40.90-54.30; 7075, 42.90-56.30; 7079, 43.40-56.80.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.60; 1 in., 29.35; 1¼ in., 39.75; 1½ in., 47.50; 2 in., 57.40; 4 in., 157.60; 6 in., 282.95; 8 in., 425.80.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.00-43.50	58.60-62.80
12-14	42.00-43.50	59.30-63.80
15-17	42.00-43.50	60.50-65.50
18-20	42.50-44.00	62.50-68.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 20.25-20.75; No. 2 heavy copper and wire, 18.50-19.00; light copper, 16.50-17.00; No. 1 composition red brass, 16.50-17.00; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 26.50c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.13-49.63b	45.36-46.86c	....	48.32-49.82	22.500	22.500	21.750
Yellow Brass	42.69-43.57	29.53-30.28d	43.23-44.11	45.60-46.48	17.000	16.750	15.250
Low Brass, 80%	44.90-46.03	44.84-45.97	45.44-46.57	47.71-48.84	19.000	18.750	18.250
Red Brass, 85%	45.67-46.89	45.61-46.83	46.21-47.43	48.48-49.70	19.750	19.500	19.000
Com. Bronze, 90%	46.98-48.30	46.92-48.24	47.52-48.84	49.54-50.86	20.625	20.375	19.875
Manganese Bronze	50.81-51.52	44.91-45.74	55.44-56.18	....	15.875	15.625	14.875
Muntz Metal	45.19-45.95	41.00-41.76	....	....	15.875	15.625	15.125
Naval Brass	47.07-47.83	41.38-42.14	54.13-54.89	50.48-50.99	15.625	15.375	14.875
Silicon Bronze	52.84-54.37	52.03-53.56	52.88-54.41	54.77-56.29	22.125	21.875	21.125
Nickel Silver, 10%	57.93-58.82	60.26-61.15	60.26-61.15	....	22.000	21.750	....
Phos. Bronze, A-5%	67.17-68.59	67.67-69.09	67.67-69.09	68.85-70.72	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, or any or all kinds of scrap, add 1 cent per lb.

position turnings, 15.50-16.00; new brass clippings, 14.00-14.50; light brass, 10.00-10.50; heavy yellow brass, 11.50-12.00; new brass rod ends, 12.00-12.50; auto radiators, unsweated, 12.50-13.00; cocks and faucets, 13.50-14.00; brass pipe, 13.50-14.00.

Lead: Heavy, 6.75-7.00; battery plates, 2.75-3.00; linotype and stereotype, 8.75-9.25; electrotype, 7.00-7.50; mixed babbitt, 8.75-9.25.

Monel: Clippings, 28.00-29.00; old sheets, 25.00-26.00; turnings, 20.00-23.00; rods, 28.00-29.00.

Nickel: Sheets and clips, 42.00-45.00; rolled anodes, 42.00-45.00; turnings, 37.00-40.00; rod ends, 42.00-45.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 9.50-10.00; clean borings and turnings 6.00-6.50; segregated low copper clips 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 13.00-14.00; mixed high copper clips, 11.00-11.50.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 9.00-9.50; clean borings and turnings, 8.00-8.50; segregated low copper clips, 15.00-15.50; segregated high copper clips, 13.00-13.50; mixed low copper clips, 14.00-14.50; mixed high copper clips, 12.50-13.00.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.00-9.50; clean borings and turnings, 8.00-8.50; segregated low copper clips, 12.50-13.00; segregated high copper clips, 11.00-11.50; mixed low copper clips, 11.50-12.00; mixed high copper clips, 10.50-11.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 51.00; light scrap, 46.00; turnings and borings, 31.00.

Copper and Brass: No. 1 heavy copper and wire, 22.00; No. 2 heavy copper and wire, 21.25; light copper, 19.00; refinery brass (60% copper) per dry copper content, 20.00.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 22.00; No. 2 heavy copper and wire, 21.25; light copper, 19.00; No. 1 composition borings, 19.00; No. 1 composition solids, 19.50; heavy yellow brass solids, 13.50; yellow brass turnings, 12.50; radiators, 15.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.70.

Copper: Flat-rolled, 41.79; oval, 40.00, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 113.50; 200-499 lb, 112.00; 500-999 lb, 111.50; 1000 lb or more, 111.00.

Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.70 per lb in 100-lb drums.

Chromic Acid: 100 lb, 33.30; 500 lb, 32.80; 200 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30; f.o.b. Detroit.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 13.70; 2000-5900 lb, 11.70; 6000-11,900 lb, 11.45; 12,000-22,900 lb, 11.20; 23,000 lb or more, 10.70.

Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.

Nickel Sulphate: 5000-22,000 lb, 33.50; 23,000-35,900 lb, 33.00; 36,000 lb or more, 32.50.

Sodium Cyanide: 100 lb, 27.60; 200 lb, 25.90; 400 lb, 22.90; 1000 lb, 21.90; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 75.80; 100-600 lb, 66.80; 700-1900 lb, 64.00; 2000-9900 lb, 62.20; 10,000 lb or more, 60.80.

Stannous Chloride (anhydrous): Less than 25 lb, 165.30; 25 lb, 130.30; 100 lb, 115.30; 400 lb, 112.90; 5200-19,600 lb, 100.70; 20,000 lb or more, 88.50.

Stannous Sulphate: Less than 50 lb, 128.10; 50 lb, 98.10; 100-1900 lb, 96.10; 2000 lb or more, 94.10.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 147*)

export. Broker prices remain at April levels.

Prices for clean cast and unstripped motor blocks have moved upward on spotty foundry buying.

Los Angeles—Although scrap inventories of large consumers are shrinking, the absence of significant demand indicates the market will continue dormant throughout the summer. Collections are down. Little tonnage is moving to dealers.

San Francisco—Some of the optimism has been drained from the scrap market here. Recent hopes that the rising steel ingot rate would strengthen prices have not been confirmed. Reason: The mills are not maintaining their recent scrap consumption rate.

Seattle—The scrap market here continues dormant. Prospects for early improvement are dim. Prices are nominal. A few small sales have been made at the recently established levels. Japanese buyers continue to stay out of the market.

Pig Iron . . .

Pig Iron Prices, Page 142

While many blast furnaces are closed down pig iron is available in excess of requirements. The situation is expected to prevail until September.

Many foundries are closing for vacations early in July, some for three weeks and longer. They are restricting their iron intake in anticipation of light melting schedules.

Most gray iron foundries are op-

BRIDGE CRANES

2-150 Ton P&H (2-75 Ton trolleys & 2-10 ton auxiliaries) Span—74′8″, Clearance Rail to truss bottom—11′6″, 250 DC

1-50 Ton NILES (2-25 ton trolleys & 1-5 ton auxiliary) Span—76′, Clearance—Rail to truss bottom—8′, 250 DC

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Can sell your metal line in Southern California. Heavy sales background in tubing, strip, wire, bar, forgings and electrical components. Reply Box 672, STEEL, Penton Bldg., Cleveland 13, Ohio.

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TUBE MILL FOREMAN
Experienced in the operations of electric weld steel tubing mills. Steady job with well established company. Replies confidential. Write Box 669, STEEL, Penton Bldg., Cleveland 13, Ohio.

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ESTABLISHED SALES REPRESENTATIVE Pittsburgh District, desires to represent manufacturer selling to industry on straight commission basis. Have following. Reply Box 670, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE CAN HELP YOU TO CONTACT high calibre men to fill specific jobs you have in mind—
Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry.
When you have an opportunity to offer, use the Help Wanted columns of STEEL.

MACHINE SHOP AND FOUNDRY

For Sale, located just outside Memphis, Tennessee, on approximately 9.5 acre tract, R.R. sidings, approximately 42,000 sq. ft. floor space, replacement value over $400,000.

Can sell all equipment or realty separately.

John J. Howard, Jr.
Trustee in Bankruptcy
1325 Exchange Bldg. Memphis 3, Tenn.

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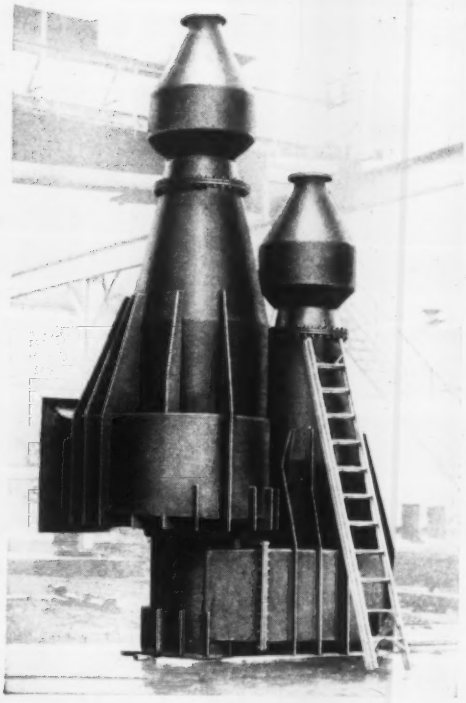
for industrial steel warehouse in Southern City of 800,000 population. Products handled consist of hot rolled bars, structurals, plates, sheets, cold rolled bars, reinforcing mesh, grating and includes stainless steel, aluminum and allied products as well as a complete warehouse service. Must be capable of reading plans and have experience in engineering. Logical distribution area is surrounding radius of 350 miles. We are interested only if you are experienced in steel warehouse sales, completely capable of supervising outside and inside salesmen and if you are aggressive "pusher" type. Excellent opportunity for the right man. If to accept this position you must leave your present job, give full details why you wish to leave. All replies held in strictest confidence. Please do not apply unless you completely fill qualifications. **Write Box 671, STEEL Penton Bldg. Cleveland 13, Ohio**



Exploring new frontiers!

But these aren't satellite launchers, though they're specially designed for high temperature operation: they're Buell extra-efficient cyclone dust collectors . . . and the new frontiers they're exploring are in industry. Everywhere in American industry, from cement mills to refineries, from chemical plants to power generating stations, Buell collectors set new records in percentage of dust removed, low maintenance, and improved plant operation. Even in the age-old field of fly ash collection, Buell extra efficiency pays off. Only *Buell* cyclones have the unique Shave-off port that traps small fines in the double eddy currents. And Buell large-diameter design eliminates bridging, clogging, or plugging. *All three* Buell Systems are illustrated and described in "The Collection and Recovery of Industrial Dusts". Write for a copy to Dept. 26-F, Buell Engineering Company, Inc., 123 William St., New York 38, N. Y.

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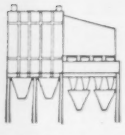

PRECIPITATOR-CYCLONE COMBINATIONS

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Experts at delivering Extra Efficiency in

DUST COLLECTION SYSTEMS

erating only 24 to 32 hours a week. They are receiving a small volume of new business and have backlogs which range from zero to three weeks. The average is around 1.75 weeks.

Only 23 of the 43 blast furnaces in the Chicago district are active. Republic Steel Corp. relighted its South Chicago, Ill., stack on June 15. It had been taken out of production Apr. 16 for relining. The low point for the year was reached in April and May when 20 furnaces were operating; In January and February 25 were operating.

Shenango Furnace Co., Sharpsville, Pa., has boosted operations of its one active blast furnace and its foundry department. About 120 furloughed workmen have been recalled. The furnace, which had been operating at about 50 per cent of capacity, now is going full blast. The foundry department has moved operations up from six to 12 turns weekly.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 140

Bethlehem Steel Co., Bethlehem, Pa., is using high strength bolts for field connections, 88,000 tons of structural steel, for three buildings, New York. Use of bolts for buildings and bridges is increasing. One building, Chase Manhattan Bank, is 60 stories taking 50,000 tons of fabricated structurals.

Warehouse . . .

Warehouse Prices, Page 142

Warehouse sales in June may exceed January bookings, the high for the year. The improvement is attributed to buying for maintenance and repairs, to a pickup in appliance manufacture, and to an occasional release for '59 cars. In some districts, demand for construction projects has stimulated the market. Hedge buying is expected to pick up in the final week of the month.

Although some distributors in the Pittsburgh district complain that they can't sell prime sheets because of competition from secondary material, a majority feel that seconds are drying up. They point out that warehouses in the East can't get enough seconds even though they'll pay 10 per cent more for them than the local buyers.

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1. Volume of coolant, rather than pressure, must be kept at a high level for maximum wheel life.

2. Coolant must be accurately directed to the *point of contact* between the wheel and the work, because this is the point at which most heat is generated.

3. Coolant must be applied equally to both sides of the wheel to avoid crooked cuts and wheel breakage.

Radial holes in ALLISON wheels carry coolant deep *inside* the cut itself. This extra cooling action assures clean cuts and maximum wheel life on solids from 2″ to 12″ round or square. These holes also impart a self-dressing action to the wheel, keeping sharp grits exposed for cool, fast cutting.

Allison-Campbell Design Assures Proper Cooling

High volume of coolant is provided by a large reservoir and an extra-capacity coolant pump.

Good distribution of coolant is assured by a coolant distributor, standard on all CAMPBELL machines. This can be adjusted and locked in position to provide equal distribution of coolant to both sides of the wheel and to the work.

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A complete selection of machines and wheels for *any* cut-off application is offered by ALLISON-CAMPBELL. Four types of CAMPBELL machines—chop stroke, oscillating, horizontal, and rotary—in capacities from the smallest stock to 14″ rounds . . . billets up to 12″ square . . . plate up to 6″ thick and 20 ft. long. ALLISON wheels—more than 150 different specifications—rubber or resinoid bond—3″ to 34″ diameters—.006″ to 3/16″ thick.

Write for a copy of DH-20, a new bulletin describing the ALLISON-CAMPBELL Demonstration Laboratory, and how you can take advantage of the special services it offers. Complete details on ALLISON wheels and CAMPBELL machines are also available.

ALLISON-CAMPBELL DIVISION
AMERICAN CHAIN & CABLE

921 Connecticut Avenue, Bridgeport 2, Conn.

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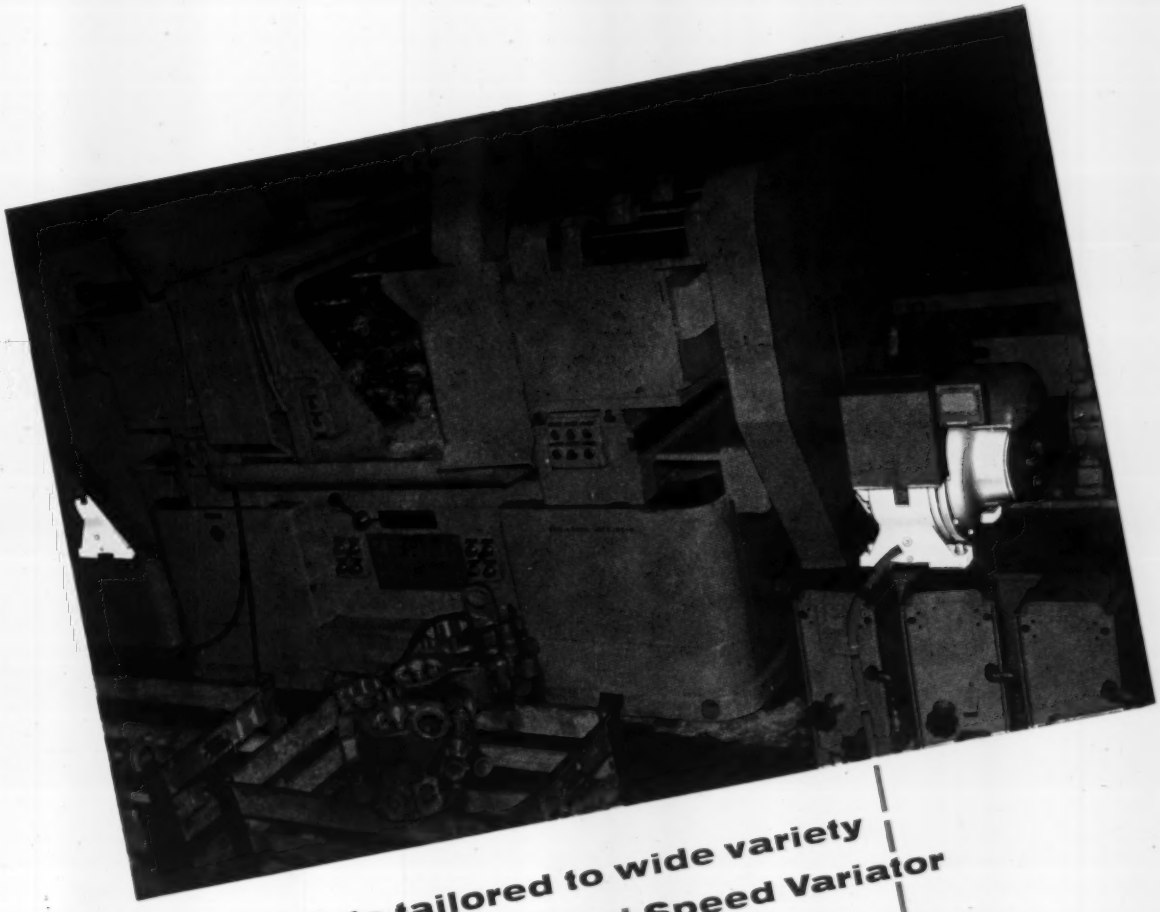

Machining speeds tailored to wide variety of metals with Cleveland Speed Variator

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Infinitely variable, the Speed Variator provides continuous speed progressions over its full 9:1 range . . . from ⅓ to 3 times input speed. Manual or automatic remote control instantly and smoothly adjusts output speed. Variator is rugged, compact, quiet running.

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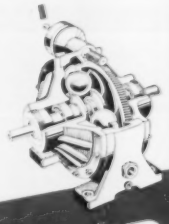
Power is transmitted from input shaft to output shaft through alloy steel driving balls which are in pressure contact with discs attached to the two shafts. Relative speeds of the shafts are adjusted by changing the positioning of the axles on which the balls rotate (see cutaway view, right).



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9,324 #2 Cans of Corn Per Minute...

No. 3 Electrolytic Tinning Line — Jones & Laughlin Aliquippa Works

This is the way the food industry might rate the speed of this Wean Electrolytic Tinning Line. And canners across the country recognize that such a modern, continuous, high speed tinplate line makes an important contribution to their business. For quality tinplate, produced at speeds up to 2000 fpm, is the low cost material from which over three billion "tin cans" are made annually.

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